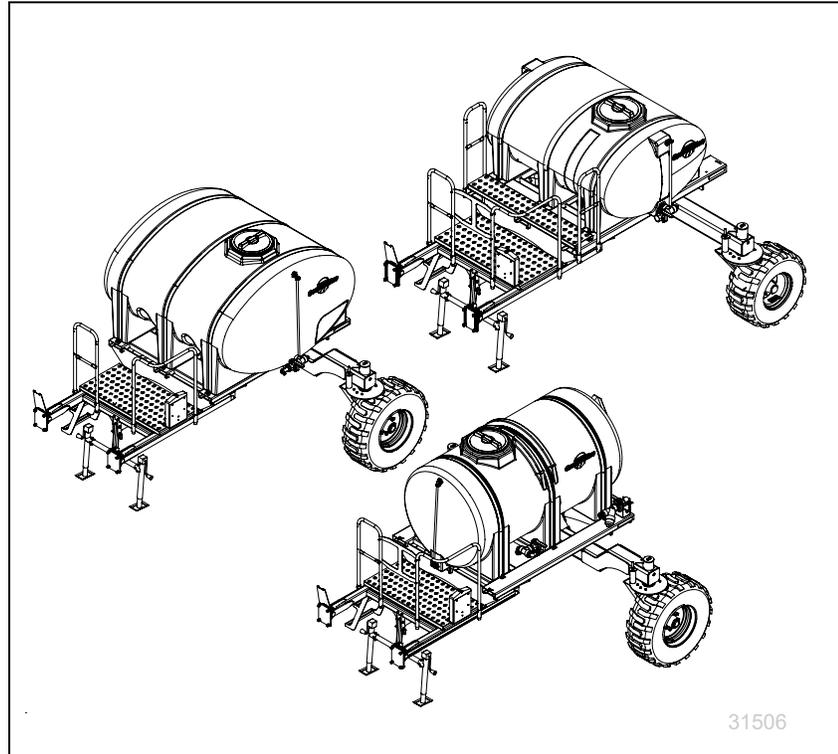


Operator Manual

SML-1000, SML-735, and SML-500
Semi-Mounted Fertilizer Carts



Read the Operator manual entirely. When you see this symbol, the subsequent instructions and warnings are serious - follow without exception. Your life and the lives of others depend on it!



Illustrations may show optional equipment not supplied with standard unit, and may not show your specific cart model where operation is identical.

ORIGINAL INSTRUCTIONS



Machine Identification

Record your machine details in the log below. If you replace this manual, be sure to transfer this information to the new manual.

If you or the dealer have added options not originally ordered with the machine, or removed options that were originally ordered, the weights and measurements are no longer accurate for your machine. Update the record by adding the machine weight and measurements with the option(s) weight and measurements.

| | |
|-----------------------------|-------------------|
| Model Number | |
| Serial Number | |
| Machine Height | |
| Machine Length | |
| Machine Width | |
| Machine Weight | |
| Year of Construction | |
| Delivery Date | |
| First Operation | |
| Accessories | <hr/> <hr/> <hr/> |

Dealer Contact Information

Name: _____

Street: _____

City/State: _____

Telephone: _____

Email: _____

Dealer's Customer No.: _____



WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov



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Printed in the United States of America



Important Safety Information

Look for Safety Symbol

The SAFETY ALERT SYMBOL indicates there is a potential hazard to personal safety involved and extra safety precaution must be taken. When you see this symbol, be alert and carefully read the message that follows it. In addition to design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence, and proper training of personnel involved in the operation, transport, maintenance, and storage of equipment.



Be Aware of Signal Words

Signal words designate a degree or level of hazard seriousness.

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is limited to the most extreme situations, typically for machine components that, for functional purposes, cannot be guarded.



WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.



CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.



Prepare for Emergencies

- ▲ *Be prepared if a fire starts*
- ▲ *Keep a first aid kit and fire extinguisher handy.*
- ▲ *Keep emergency numbers for doctor, ambulance, hospital, and fire department near phone.*



Be Familiar with Safety Decals

- ▲ *Read and understand "Safety Decals" on page 5, thoroughly.*
- ▲ *Read all instructions noted on the decals.*
- ▲ *Keep decals clean. Replace damaged, faded, and illegible decals.*



Wear Protective Equipment

- ▲ *Wear protective clothing and equipment.*
- ▲ *Wear clothing and equipment appropriate for the job. Avoid loose-fitting clothing.*
- ▲ *Because operating equipment safely requires your full attention, avoid wearing entertainment headphones while operating machinery.*



Handle Chemicals Properly

Agricultural chemicals can be dangerous. Improper use can seriously injure persons, animals, plants, soil, and property.

- ▲ *Read and follow chemical supplier instructions. Obtain and read the MSDS^a for any material used.*
- ▲ *Wear protective clothing.*
- ▲ *Handle all chemicals with care.*
- ▲ *Agricultural chemicals can be dangerous. Improper use can seriously injure persons, animals, plants, soil, and property.*
- ▲ *Inhaling smoke from any type of chemical fire is a serious health hazard.*
- ▲ *Store or dispose of unused chemicals as specified by the chemical manufacturer.*
- ▲ *If chemical is swallowed, carefully follow the chemical manufacturer's recommendations and consult with a doctor.*
- ▲ *If persons are exposed to a chemical in a way that could affect their health, consult a doctor immediately with the chemical label or container in hand. Any delay could cause serious illness or death.*
- ▲ *Dispose of empty chemical containers properly. By law rinsing of the used chemical container must be repeated three times. Puncture the container to prevent future use. An alternative is to jet-rinse or pressure rinse the container.*
- ▲ *Wash hands and face before eating after working with chemicals. Shower as soon as application is completed for the day.*
- ▲ *Apply only with acceptable wind conditions. Make sure wind drift of chemicals will not affect any surrounding land, people, or animals.*
- ▲ *Never wash out a hopper within 100 feet of any freshwater source or in a car wash.*

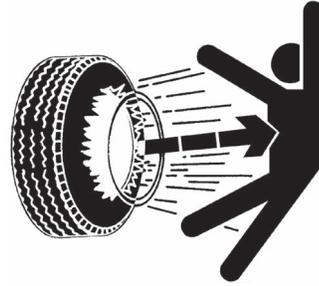


a. MSDS: Material Safety Data Sheet

Tire Safety

Tire changing can be dangerous and should be performed by trained personnel using correct tools and equipment.

- ▲ *When inflating tires, use a clip-on chuck and extension hose long enough for you to stand to one side—not in front of or over tire assembly. Use a safety cage, if available.*
- ▲ *When removing and installing wheels, use wheel-handling equipment adequate for weight involved.*



Keep Riders Off Machinery

Riders obstruct the operator's view. Riders could be struck by foreign objects or thrown from the machine.

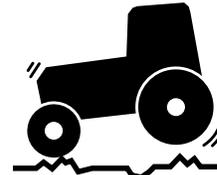
- ▲ *Never allow children to operate equipment.*
- ▲ *Keep all bystanders away from machine during operation.*



Transport Machinery Safely

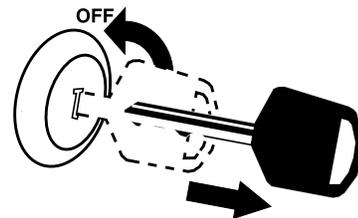
Maximum transport speed for implement is 20 mph (32 kph), 13 mph (22 kph) in turns. Some rough terrains require a slower speed. Sudden braking can cause a towed load to swerve and upset.

- ▲ *Do not exceed 20 mph. Never travel at a speed which does not allow adequate control of steering and stopping. Reduce speed if towed load is not equipped with brakes.*
- ▲ *Comply with state and local laws.*
- ▲ *Do not tow an implement that, when fully loaded, weighs more than 1.5 times the weight of towing vehicle.*
- ▲ *Carry reflectors or flags to mark cart in case of breakdown on the road.*
- ▲ *Keep clear of overhead power lines and other obstructions when transporting. Refer to transport dimensions under “**Specifications and Capacities**” on page 32.*
- ▲ *Do not fold or unfold the cart while the tractor is moving.*



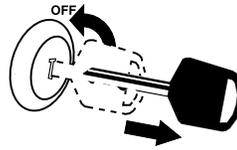
Shutdown and Storage

- ▲ *Secure cart using supports provided. Block wheels.*
- ▲ *Detach and store cart on level ground in an area where children normally do not play.*



Practice Safe Maintenance

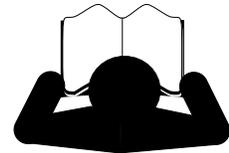
- ▲ *Understand procedure before doing work. Use proper tools and equipment. Refer to this manual for additional information.*
- ▲ *Work in a clean, dry area.*
- ▲ *Put tractor in park, turn off engine, and remove key before performing maintenance while hitched.*
- ▲ *Inspect all parts. Make sure parts are in good condition and installed properly.*
- ▲ *Remove buildup of grease, oil, or debris.*
- ▲ *Remove all tools and unused parts from cart before operation.*



Safety at All Times

Thoroughly read and understand the instructions in this manual before operation. Read all instructions noted on the safety decals.

- ▲ *Be familiar with all cart functions.*
- ▲ *Operate machinery from the driver's seat only.*
- ▲ *Do not leave cart unattended with tractor engine running.*
- ▲ *Do not stand between the tractor and cart during hitching.*
- ▲ *Watch out for wires, trees, etc., when folding and raising cart. Make sure all persons are clear of working area.*



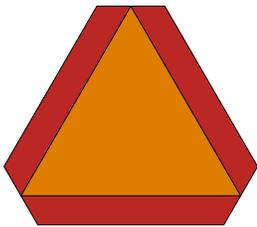
Safety Decals

Safety Reflectors and Decals

Your implement comes equipped with all safety reflectors and decals in place. They were designed to help you safely operate your implement.

- ▲ *Read and follow decal directions.*
- ▲ *Keep lights in operating condition.*
- ▲ *Keep all safety decals clean and legible.*
- ▲ *Replace all damaged or missing decals. Order new decals from your Great Plains dealer. Refer to this section for proper decal placement.*
- ▲ *When ordering new parts or components, also request corresponding safety decals.*

808-055C



Slow Moving Vehicle Reflector

Mounted behind the tank;
one total

838-266C

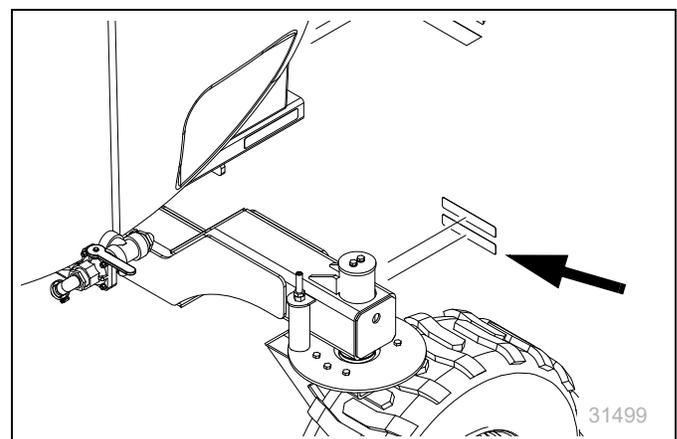
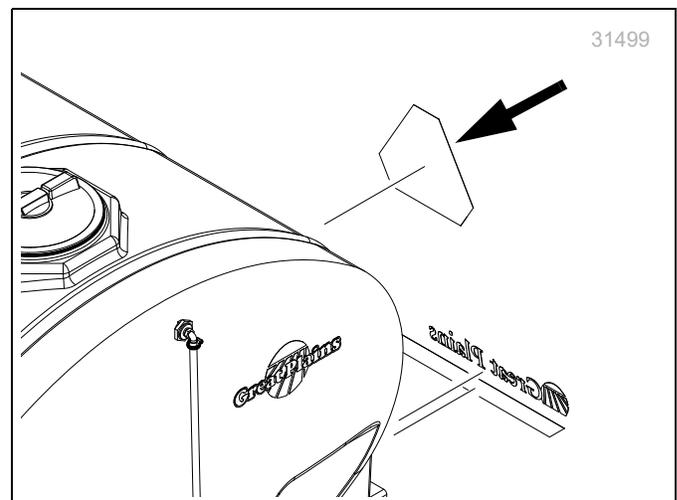


Red Reflectors

On rear face of axle, below daytime reflectors;
two total

To install new decals:

1. Clean the area on which the decal is to be placed.
2. Peel backing from decal. Press firmly on surface, being careful not to cause air bubbles under decal.

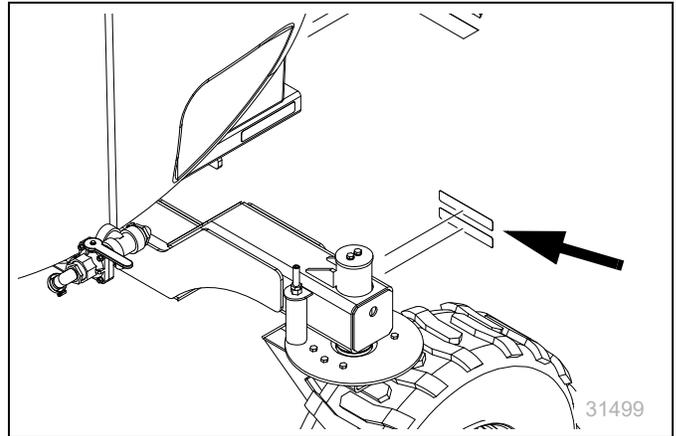


838-267C



Daytime Reflectors

On rear face of axle, above red reflectors; two total

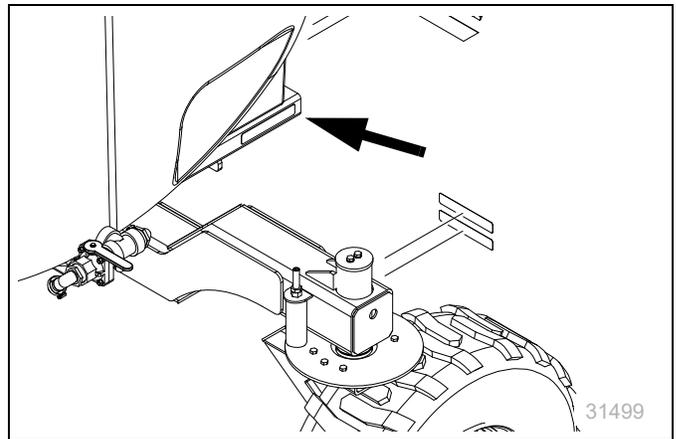


838-265C

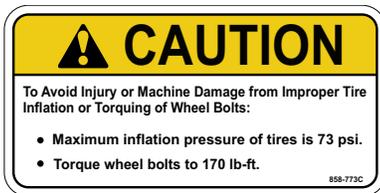


Amber Reflectors

On the rear of the frame side channels; two total



858-773C



Caution: Pressure and Torque

On outside face of each caster wheel; two total





Introduction

Great Plains welcomes you to its growing family of new product owners. The SML-1000, SML-735, and SML-500 Semi-Mounted Fertilizer Cart has been designed with care and built by skilled workers using quality materials. Proper setup, maintenance, and safe operating practices will help you get years of satisfactory use from the cart.

Models Covered

This manual applies only to the cart models shown and listed in the figures at right.

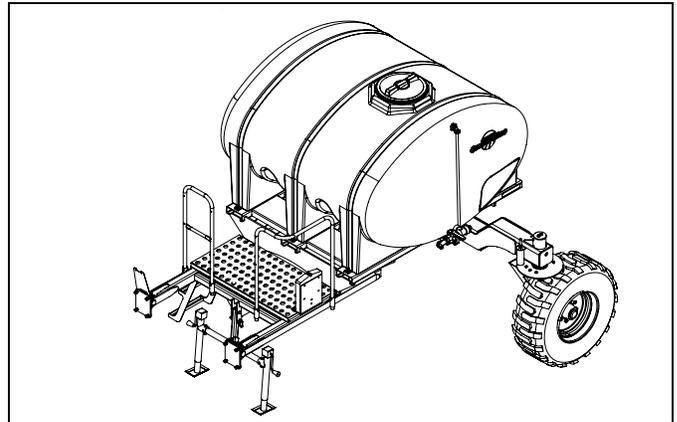


Figure 1
SML-1000 Cart

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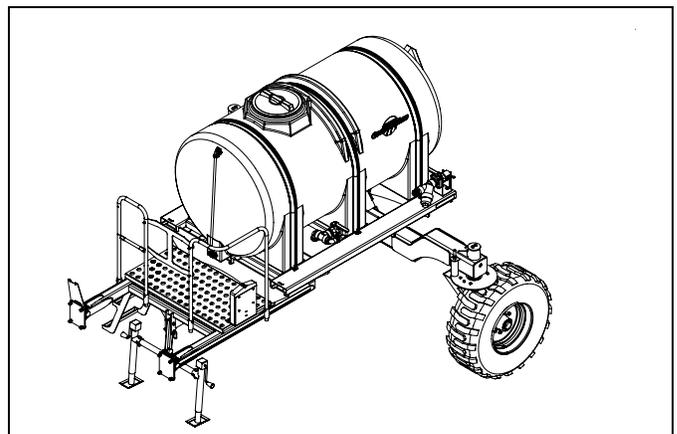


Figure 2
SML-735 Cart

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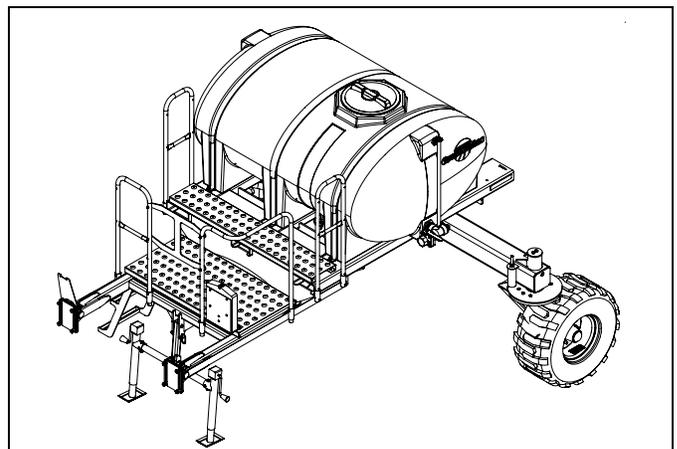


Figure 3
SML-500 Cart

32014

Description of Unit

The SML-1000, SML-735, and SML-500 carts are semi-mounted trailing tank carts intended for use with specific models of Great Plains planters and drills.

Use with any implement requires:

- a “Type 2” fertilizer manifold,
- an implement-mounted pump, with a single inlet routed to the implement rear hitch, and
- mounting of the quick-connect hitch hardware provided with the cart (which requires removing the rear pintle hitch, if present on the implement).

Intended Usage

Use the SML-1000, SML-735, and SML-500 Semi-Mounted Fertilizer Cart to supply compatible agricultural chemicals to the implement pump and boom system. Do not modify the cart for use with attachments other than Great Plains options and accessories specified for use with the cart.

Compatible Materials

Carts are intended for pre-mixed liquid fertilizers. The carts do not include agitators to prevent rapid settling, stratification, coagulation, or precipitation of components not fully dissolved or suspended in the base liquid.

- Use stable mixtures.
- The specific gravity (density relative to water) of the mixture must be 1.7 or lower.
- If the mixture contains any particulates, the largest must be no larger than the smallest of:
 - screen size of the cart inlet filter,
 - screen size of the pump strainer, and
 - the orifice size of the boom nozzle plates.
- All materials must be compatible with:
 - high density polyethylene (HDPE),
 - nylon,
 - polypropylene (PP),
 - polyvinyl chloride (PVC),
 - Teflon[®] (PTFE) plastics,
 - EPDM and Viton[®] rubber,
 - stainless steel, and
 - temporary contact with cast iron.

| Compatible Implement Models | Cart Models | | |
|-----------------------------|---------------|--------------|--------------|
| | SML-1000 Cart | SML-735 Cart | SML-500 Cart |
| AD4010HD | No | Yes | Yes |
| YP2425, YP2425A | Yes | Yes | Yes |
| YP4010HDP | No | Yes | Yes |
| YP4020P | No | Yes | Yes |
| YP4025, YP4025A | No | Yes | Yes |

Note: The SML-1000, SML-735, and SML-500 carts are not supported with 30-foot (9 m) implement models AD3010HD, YP3010HDP, YP3020P, or YP3025/A.

Serial Number Plates

The serial number plate is located on the side face of the left front frame tank support plate.

Note: The SML-1000, SML-735, and SML-500 were formerly sold as 407-451A, 407-452A, and 407-643A and did not have serial number plates.

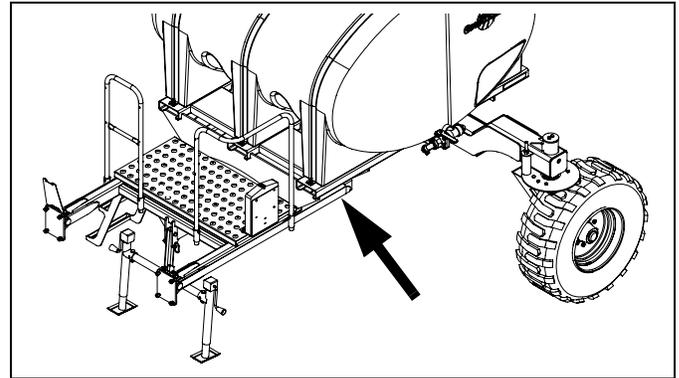


Figure 4
Serial Number Plate

31487

Document Family

| | |
|----------|--------------------------------------|
| 407-451M | Cart Operator Manual (this document) |
| 407-451P | Cart Parts Manual |
| | Material Rate Manuals |
| 167-085B | AD4010HD |
| 401-406B | YP2425 |
| 401-626B | YP2425A |
| 401-571B | YP4010HDP, YP4020P, and YP4025 |
| 401-627B | YP4025A |

Using This Manual

This manual will familiarize you with safety, assembly, operation, adjustments, troubleshooting, and maintenance. Read this manual and follow the recommendations to help ensure safe and efficient operation.

The information in this manual is current at printing. Some parts may change to assure top performance.

Definitions

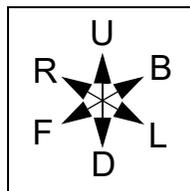
The following terms are used throughout this manual.

NOTICE

A crucial point of information related to the preceding topic. Read and follow the directions to remain safe, avoid serious damage to equipment and ensure desired field results.

Note: Useful information related to the preceding topic.

Right-hand and left-hand as used in this manual are determined by facing the direction the machine will travel while in use unless otherwise stated. An orientation rose in some line art illustrations shows the directions of: Up, Back, Left, Down, Front, Right.



Owner Assistance

If you need customer service or repair parts, contact a Great Plains dealer. They have trained personnel, repair parts, and equipment specially designed for Great Plains products.

Your machine's parts were specially designed and should only be replaced with Great Plains parts.

Further Assistance

Great Plains Manufacturing, Inc. and your Great Plains dealer want you to be satisfied with your new fertilizer cart. If for any reason you do not understand any part of this manual or are otherwise dissatisfied, please take the following actions first:

1. Discuss the matter with your dealership service manager. Make sure they are aware of any problems so they can assist you.
2. If you are still unsatisfied, seek out the owner or general manager of the dealership.

If your dealer is unable to resolve the problem or the issue is parts related, please contact:

Great Plains Service Department
1525 E. North St.
P.O. Box 5060
Salina, KS 67402-5060

Or go to www.greatplainsag.com and follow the contact information at the bottom of your screen for our service department.



Preparation and Setup

This section helps you prepare your cart for use, and covers tasks that need to be done seasonally, or when the tractor/implement/cart configuration changes.

Before using the cart in the field, you must hitch it to a compatible planter or drill, and inspect and pre-set systems.

Initial Setup

See “**Appendix C - Initial Setup**” on page 42 for tasks that must be completed prior to initial use, including:

- Dismount implement rear pintle hitch, if any, and
- Install implement quick hitches for cart.

Post-Delivery/Seasonal Setup

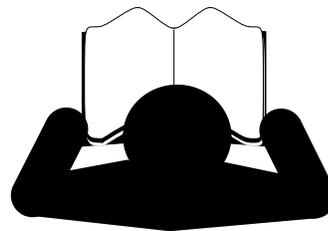
On initial delivery, use with a new tractor, and seasonally, check and as necessary, complete these items before continuing to the routine setup items:

- Flush tank and lines (page 28), and
- Clean inlet filter (page 29).

Pre-Planting Setup

Complete this cart checklist before routine setup:

- Read and understand “**Important Safety Information**” on page 1.
- Check that all working parts are moving freely, bolts are tight, and cotter pins are spread.
- Check that all grease fittings are in place and lubricated. See “**Lubrication and Scheduled Maintenance**” on page 30.
- Check that all safety decals and reflectors are correctly located and legible. Replace if damaged. See “**Safety Decals**” on page 5.
- Inflate tires to pressure recommended and tighten wheel bolts as specified. See “**SML-1000, SML-735, and SML-500 Fertilizer Carts**” on page 32.
- Check winds. For application via fertilizer coulter or high rate dribbler, high wind may disperse or displace material. Wind is normally not a factor for low-rate “starter” application via the tube between the opener discs, or via Keeton seed firmer.



CAUTION

Spill Hazard and Tank Damage Risk:
Periodically check the tension of the straps for the fertilizer tank. Strap tension will change as outside air temperature changes. Adjust tension as necessary to prevent personal injury or damage to the fertilizer tank.

NOTICE

Loss of Time Risk:
Perform any planter seed cart changes before hitching fertilizer cart, for example, if switching from bulk box to hopper. Once hitched, the fertilizer cart obstructs forklift access to the rear of the planter. Forklifts may still approach the planter from the side, but hopper and seed box lifting takes more time and care from the side.

Hitching Cart to Implement

There are two main methods of bringing the cart arms into alignment with the quick hitches installed on the implement (planter or drill):

- Hitch the implement to a tractor, and carefully back the implement up to the cart. These instructions presume the use of this approach.
- Lift the cart from behind with a forklift (forks under frame), and move it into alignment with implement.

⚠ DANGER

Crushing Hazard:

Do not stand or place any body part between cart and moving implement. You may be severely injured or killed by being crushed between the cart arm and implement. Stop tractor engine and set parking brake before securing quick hitches.

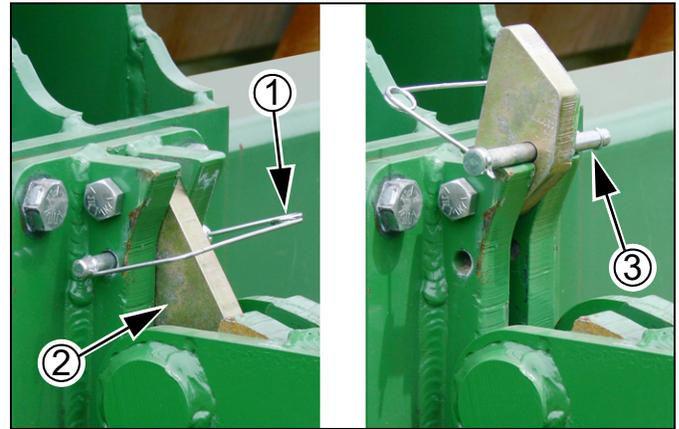


Figure 5
Quick Hitch Closed and Open

31484

Shims

Refer to Figure 6

Four shims are supplied with each model of cart. The shims fit between the cart hitch and the implement. It is recommended to use two shims (26) on each right and left quick hitch.

Removing one shim will result in a $\frac{1}{2}$ in move of the casters in the direction of the side the shim was removed from.

Moving one of the shims from its present position and inserting it on the opposite side results in the casters trailing one inch in the direction of the side the shim was originally removed from.

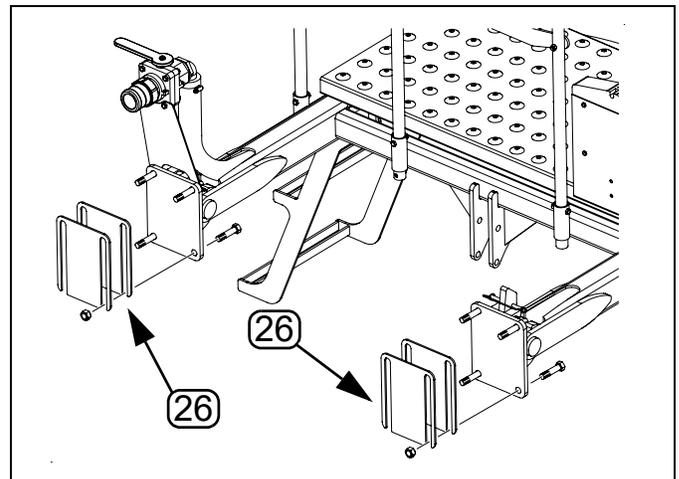


Figure 6
Shims

32016

⚠ WARNING**Crushing and Loss of Control Hazards:**

Do not move the cart by hand. Even when empty, the cart is too heavy for safe hand movement. Wheel casters can also cause sudden changes in tongue weight. Attempting hand moves could result in serious injury or equipment damage. Use a powered hoist or lift if the cart must be moved for alignment with towing implement.

Open Implement Hitches

At the implement, if the hitches are closed, latch them both open.

Refer to Figure 5

1. Remove the snap lock wire pin ①.
2. Flip the latch plate ② fully up.
3. Re-insert the pin ③ in the plate only.

Hitch Cart and Implement

4. Bring implement and cart into close alignment.

Refer to Figure 5 and Figure 7

5. Use the parking stand jacks (page 16) to raise the cart arms above the quick hitch hooks ④.
6. Move the implement and/or cart into contact.
7. Use the parking jacks to lower the cart arms into the quick hitch hooks.
8. Remove the snap lock wire pins ①, allow the latch plates ② to fall.
9. Insert pins through both hook risers and latch plates. Pull up on plates to verify pinning. Secure the pins with the wire bails.

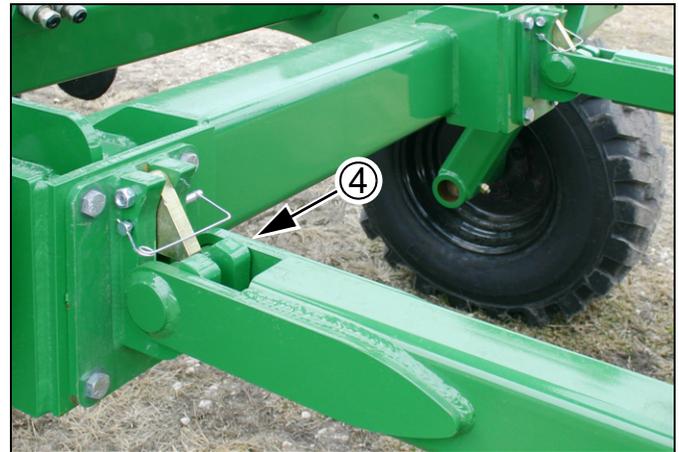


Figure 7:
Cart Hitched to Implement

31485

⚠ CAUTION**Roll-Away Hazard:**

Prior to hitching cart, ensure implement cannot move. If implement is hitched to a tractor, set tractor brakes or put tractor in Park. Block tires if no tractor is hitched. Once weight is off the cart parking stand, the cart can roll freely. If the ground is unlevel, the cart could cause the implement to move. The parking stand of an unhitched implement may not prevent roll-away. A roll-away accident could result in equipment damage, serious injury, or death.

Double-Check Latch Plates

⚠ DANGER

Accident Hazard:

Ensure the latch plates are pinned down. The pins must be through **both the hook risers and the plates**, and not just one or the other. If a plate is merely resting on a pin, or a pin is only through a plate, or pin is not secured, one or both cart arms may come loose in transport. Equipment damage is likely. An accident could result in serious injury or death.

See Figure 5 (left) and Figure 7 on page 12 for correct latch plate configurations.

Refer to Figure 8 for

Problems to watch for:

- a. Pin behind latch plate:
This is a dangerous configuration. The cart is not hitched. The latch plate cannot prevent an unhitch accident while in motion.
- b. Pin through latch plate only:
This is a hazardous configuration. It causes excess wear on the hitch and latch, which may fail, and fail to prevent an unhitch accident while in motion.
- c. No pin:
This is a hazardous configuration. The latch plate can bounce out of engagement, and fail to prevent an unhitch accident while in motion. It also causes excess wear on the hitch and latch.
- d. Pin not secured by wire bail:
This is a hazardous configuration. The pin will work loose, causing the same hazard as configuration c.

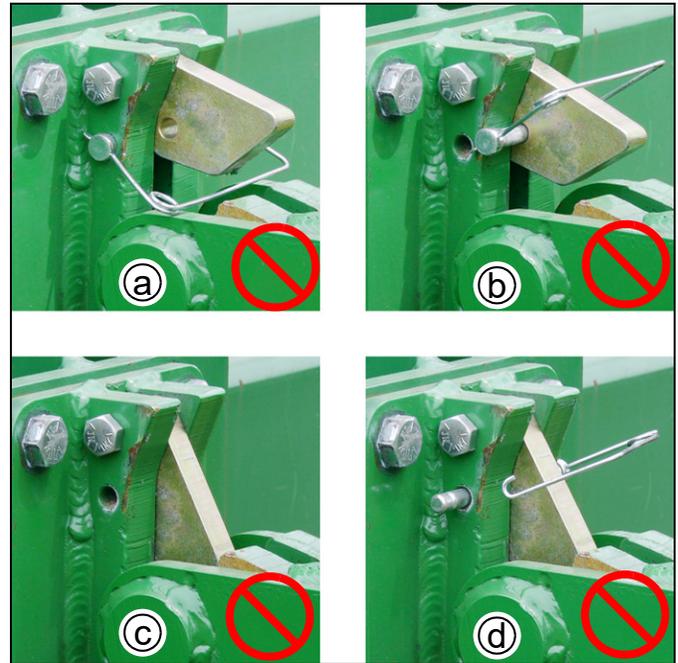


Figure 8
Incorrect Latch Plates

31500

Make Fertilizer Connection

Make and secure mechanical hitch connections (page 12) before making the fertilizer line connection.

Refer to Figure 9
(which depicts inlet valve open and outlet valve closed)

10. Close shut-off valves on both cart outlet (56) and planter inlet (6).
11. Remove plug (not shown) from inlet.
12. Inspect, and as needed, clean outlet.
13. Mate connectors. Fold cam levers forward to lock. Leave valves closed.

NOTICE

Material Loss Risk:

Open hose and inlet valves only when ready to begin planting. Close them when not in use. Damage to hoses when not applying material can result in rapid tank depletion.

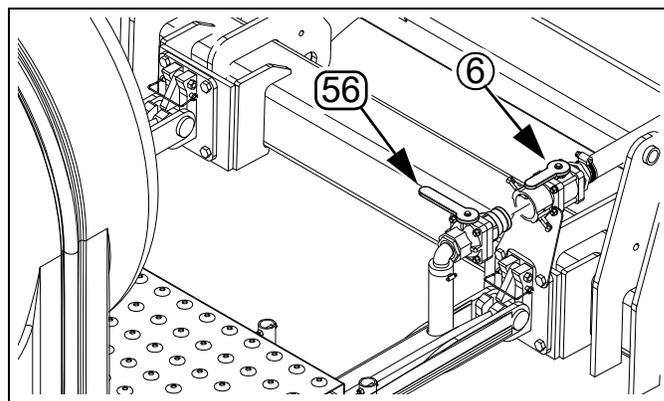


Figure 9

31495

Fertilizer Cart Connection

Note: These carts require a “Type 2” boom on the planter, with a single 2in quick-connect inlet at the rear of the planter.

If there is a boom but no quick connect, the planter is probably plumbed for on-board dual 200 gallon tanks, and not a cart.

If there are four quick connects, the planter has a “Type 3” boom and is not compatible.

If there are five quick-connects, only the inlet for the Type 2 boom is served by a pump and may be connected to the cart. The Type 3 boom is unused.

Parking Stands

Refer to Figure 10

The parking stands support the front of the cart when unhitched, and also provide height control during hitching and unhitching.

WARNING

Crushing Hazard:

Never remove the parking stand pin ⑦ when the cart is supported solely by the stands. Unless the cart is otherwise immobilized against any movement, the front of the cart may move forward or backward when the pin is removed, and the arms will fall to the ground. Anyone in the path of the arms could suffer serious injury or death.

Raise Stand After Hitching

1. Verify that the cart arms are fully seated in the implement quick hitch, and that the hitch arms are correctly latched and pinned (page 13).
2. Operate the jack stand cranks ⑧ in the counter-clockwise direction to raise the feet off the ground. It is not necessary to fully retract the leg extensions.
3. When all weight is off the stand assembly, remove the lock pin ⑦.

Refer to Figure 11

4. Swing the stand to the rear, until the lock pin hole aligns with holes ⑨. Insert pin.
5. To continue setup, skip to topic **"Make Fertilizer Connection"** on page 15.

Lower Stand for Unhitching

1. Verify that cart is positioned on firm, dry level ground. See advisories in the topic **"Short-Term Parking"** on page 24.
2. Support the weight of the stand assembly.
3. Remove pin holding stand under walkboard. Swing stand to vertical. If ground is uneven, it may be necessary to crank up the leg extensions a bit.
4. When stand pin hole aligns with lock hole, insert pin.
5. Operate cranks in the clockwise direction until they just begin to lift the arms in the quick hitch.

Verify that each jack is supporting a share of the weight. Operate each until it performs some lifting of the cart arms at the quick hitch.

6. To continue unhitching, skip to topic **"Short-Term Parking"** on page 24.

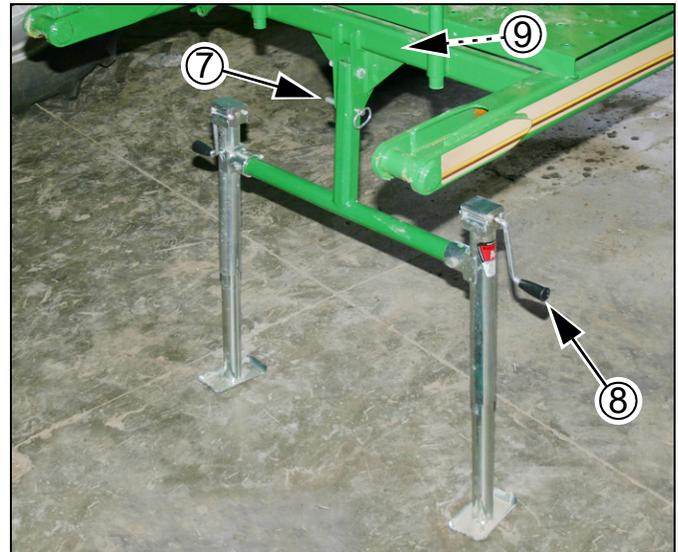


Figure 10:
Cart Parked on Stands

31488

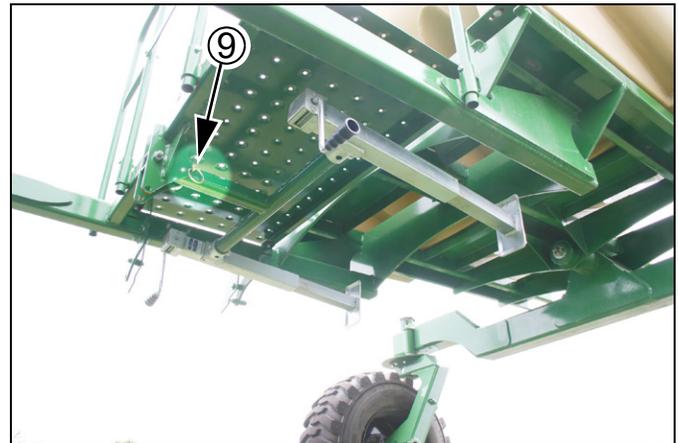


Figure 11:
Stand Raised

31491



Operating Instructions

This section covers general operating procedures. Experience, machine familiarity, and the following information will lead to efficient operation and good working habits. Always operate farm machinery with safety in mind.

Pre-Start Checklist

Perform the following steps before transporting the fertilizer cart to the field.

- Carefully read “**Important Safety Information**” on page 1.
- Inspect all hoses, tubing and fittings for holes, cracks, excess wear, and any other signs of possible leaks.
- Lubricate cart as indicated under “**Lubrication and Scheduled Maintenance**” on page 30.
- Check all tires for proper inflation. See “**SML-1000, SML-735, and SML-500 Fertilizer Carts**” on page 32.
- Check all bolts, pins, and fasteners. Torque as shown in “**Torque Values Chart**” on page 33.
- Check cart for other worn or damaged parts. Repair or replace parts before going to the field.
- Review inlet filter cleaning history. Clean filter if due (page 29).
- Ensure that the implement is set up for the material and application rate desired. See the **Seed Rate** manual for the implement. Setup items commonly include:
 - boom drop line orifice plates
 - pump rate setting
 - pump strainer check
 - relief valve check and set
- Determine how long (in time or area) it will take to exhaust the material in the tank at the desired rate. This information is important both to ensure correct application rate, and to avoid running a dry pump at material run-out.

CAUTION

Spill Hazard and Tank Damage Risk:

Periodically check the tension of the straps for the fertilizer tank. Strap tension will change as outside air temperature changes. Adjust tension as necessary to prevent personal injury or damage to the fertilizer tank.



Transporting the Cart

⚠ DANGER

Loss of Control Hazard:

Ensure that the towing vehicle is adequate for the task. Using an inadequate tow vehicle is extremely unsafe, and can result in loss of control, serious injury, and death.

A full cart adds up to 18,000 pounds (8100 kg) to the weight of the implement. An empty cart adds up to 3,300 pounds (1500 kg) to the weight of the implement. The tractor unit **MUST** be rated for the load.

Do not tow if the weight of implement plus cart exceeds the load rating of the vehicle.

⚠ DANGER

Check Bridge Loads: A loaded implement with cart in tow, can exceed the load ratings of bridges you must cross.

⚠ CAUTION

Braking and Loss of Control Hazard:

Do not exceed 20 mph (32 kph) when driving straight.

⚠ CAUTION

Loss of Control Hazard:

Do not exceed 13 mph (21 kph) in turns. The cart wheels and rear implement wheel freely caster and provide no resistance to side sway. The combination of implement and cart (particularly if the cart is loaded) is extremely heavy, and can cause “over-steer” with most tractors.

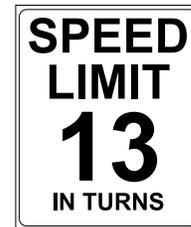
NOTICE

Reduction of Control Risk:

Material may be loaded prior to travel, but increases stopping distance, increases the need for caution in turns and braking, and increases tire wear.

NOTICE

Never exceed 3 mph (5 kph) in reverse.



Transport Checklist

⚠ CAUTION

Spill Hazard and Tank Damage Risk:

Periodically check the tension of the straps for the fertilizer tank. Strap tension will change as outside air temperature changes. Adjust tension as necessary to prevent personal injury or damage to the fertilizer tank.

- Plan the route so that no reverse movements will be necessary. Avoid steep hills.
- Check the hitch. See “**Hitching Cart to Implement**” on page 12.
- Complete implement transport checklist.
- Check that tank lid and breather plug are secure.
- Close all valves (cart inlet, tank discharge and cart outlet). See page 34 or page 35 for valve locations by cart model
- Fold up and latch ladder. See page 19.
- Always have lights on for highway operation.
- Comply with all national, regional, and local safety laws when traveling on public roads.
- Travel with caution.

Walkboard and Ladder

The cart walkboard is used for:

- access to the tank lid for clean-out,
- access to the tank lid for top-loading, and
- access to the planter ladder for planter operations (model YP2425 only).

CAUTION

Serious Injury or Death Risk:

Absolutely no riders. Allow no one on the ladder or walkboard during cart movement. The railings are designed to act as guards only when parked. The cart is subject to sudden and unpredictable jolts and sways, and the railings may fail to protect a rider. If material is loaded in the tank, there is also some risk of small amounts escaping the lid vent and reaching the walkboard during braking and in rough conditions.

Ladder Operation

Refer to Figure 12

To lower the ladder, pull the spring-loaded pin ① to cart rear and pull the top of the free end of the ladder away (right) from the cart.

To raise the ladder, merely swing it up. The pin automatically engages as the ladder is fully raised.

NOTICE

Equipment Damage Risk:

Ladder must be locked up before transport or field operations or machine damage may occur if the ladder strikes obstructions.

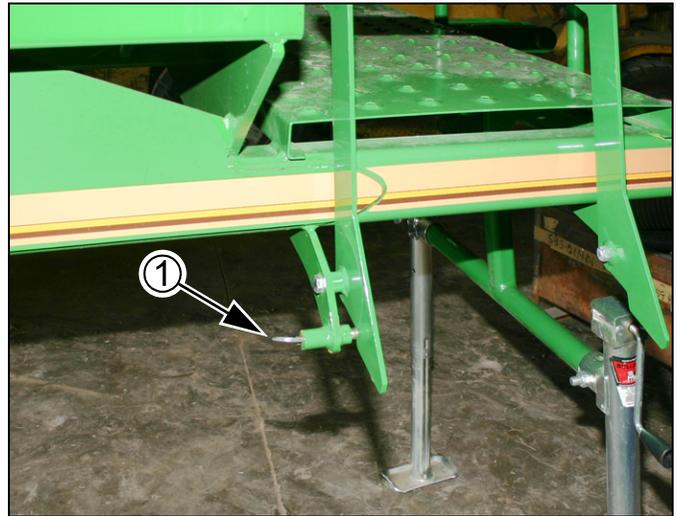


Figure 12
Walkboard Ladder Pinned Up

31503

Loading Materials

The cart tank may be loaded from the quick-fill inlet, or from the lid. Filling the tank from the top is not recommended, unless the supply line has a filter with capability equivalent to the inlet filter at the cart quick-fill.

Load only pre-mixed liquid fertilizer solutions. The cart is not designed for dry fertilizer mixing.

If the fertilizer solution has any tendency to settle, sediment, gel, coagulate, precipitate or stratify, load material immediately prior to application. The cart has no agitators for sustaining suspensions.

NOTICE

Material Loss Risk:

If loading before transport, note that a combination of a tank over half full, and rough roads, steep hills or heavy braking can slosh material to the cap, and some can escape through the breather tubes.

NOTICE

System Plugging Risk:

Do not allow fertilizer to remain in the tanks for extended periods or settling of material and system plugging will occur.

Filling by Either Method

1. Hitch the cart to the implement. Filling an unhitched cart is not recommended, as it can increase parking stand loads above the bearing capacity of the soil. A loaded cart is also substantially more difficult to move during hitching.
2. Inspect the tank from the lid.
3. Drain excess condensation from the tank, so that this water does not dilute the material to be loaded. See **“Material Clean-Out”** on page 28 for the procedure. Flush the tank if there is other residue present.

Refer to Figure 13

4. Inspect the sight gauge ①. If you can't see your hand behind the tube, clean, or replace the tube.
5. Close the cart inlet ⑤① and outlet ⑤⑥ valves. See page 34 or page 35 for valve locations by cart model.
6. Set the discharge valve ⑤⑤ (see page 34 or 35):
 On the SML-1000 Cart,
close the discharge valve.
 On the SML-735 Cart,
open the discharge valve
 On the SML-500 Cart,
close the discharge valve

⚠ DANGER

Agricultural Chemical Hazards:

Avoid contact with skin or eyes. Wear proper protective equipment as required by chemical manufacturer. Avoid prolonged breathing of chemical fumes. Wear respirator as required by chemical manufacturer. Some chemicals will cause serious burns, lung damage, and death. Seek medical assistance immediately if accident occurs. Know what to do in case of an accident.

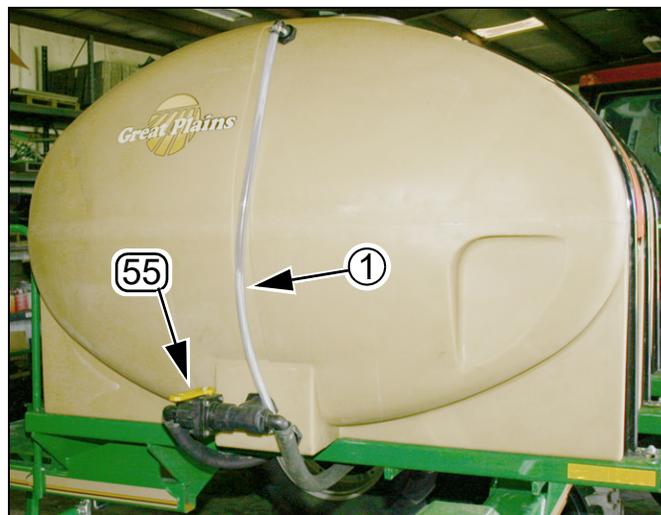


Figure 13
Sight Gauge; SML-1000 Shown

31505

Sight Gauge Scale Metric Equivalents

| Cart Capacity | SML-1000 1035 gallons | SML-735 735 gallons | SML-500 510 gallons |
|---------------|--------------------------|------------------------|------------------------|
| Full | 3920 litres | 2780 litres | 1930 litres |
| 1000 gallons | 3800 litres | - | - |
| 900 gallons | 3420 litres | - | - |
| 800 gallons | 3040 litres | - | - |
| 700 gallons | 2660 litres | 2660 litres | - |
| 600 gallons | 2280 litres | 2280 litres | - |
| 500 gallons | 1900 litres | 1900 litres | 1900 litres |
| 400 gallons | 1520 litres | 1520 litres | 1520 litres |
| 300 gallons | 1140 litres | 1140 litres | 1140 litres |
| 200 gallons | 760 litres | 760 litres | 760 litres |
| 100 gallons | 380 litres | 380 litres | 380 litres |

Tank Quick-Fill

The quick-fill inlet is a 2in quick-connect coupling.

Refer to Figure 13

These steps presume completion of step 1 through step 6 on page 20.

7. Connect nurse-tank/supply hose to quick-fill coupler (51). Lock hose in place with cam-lock levers. This inlet is located at the rear of the SML-1000 cart, and at the left side of the SML-735 cart and SML-500 cart.
8. Close valve (not shown) going to the in-line filter located just before the pump.
9. Open cart inlet valve (52).
10. Open supply outlet valve (56) (not shown), and monitor fill level in sight gauge.
11. Close supply outlet valve when tank fill reaches desired level.
12. Close cart inlet valve (52).
13. Disconnect the source at the quick fill inlet. Insert and secure the inlet plug.

Tank Lid Fill

Filling the tank from the top is not recommended, unless the supply line has a filter with capability equivalent to the inlet filter at the cart quick-fill.

Employ two persons for top fill; one to secure the hose at the tank, the other to monitor the sight gauge. One of these persons must also control a supply line shut-off valve.

These steps presume completion of step 1 through step 6 on page 20.

Refer to Figure 15

14. Open the tank lid:

The breather plug (2) in the center of the lid removes, providing 4.5 in (11.4 cm) opening. Turn it about 30° counter-clockwise to release the bayonet lugs. This opening is sufficient for most fill hoses.

The tank lid completely unscrews for a larger 16in (40.6 cm) opening. The lid has twin threads. Make sure that both are evenly engaged when tightening the lid, and that the lid is fully seated.

15. Insert the supply hose.
16. Open the supply line valve. Monitor sight gauge. Fill to desired level. Close supply valve.
17. Remove hose. Close and secure the tank lid.

Note: The cart has no pump. The implement boom pump cannot load the tank. The supply source must provide, via pump or gravity, the pressure for tank filling. A pressure of at least 10 psi (46 kPa), or a water column of at least 60 in, at the inlet, is required for a reasonable fill rate.

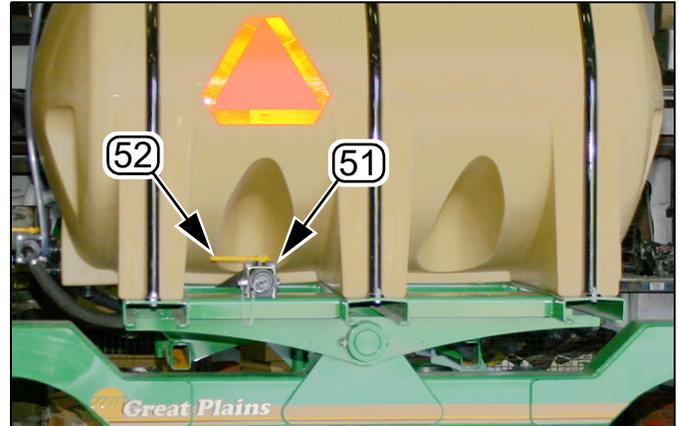


Figure 14
Quick-Fill Coupler, SML-1000
Shown

31504

CAUTION

Chemical Hazard - Tank Lid:

For top loading, wear gloves and any other protective equipment indicated for any materials that **have ever been used** in the tank (not just the material presently being loaded). Normal operations splash material on the underside of the lid. It is likely to be coated with residues that could be highly concentrated, whether dry, damp, or wet. Remove the lid slowly to avoid throwing off material toward yourself.



Figure 15
Tank Lid Breather Plug

31509

Tank Field Operation

Field Start-Up

These steps presume that all implement and cart setup items are completed.

1. Position implement at start of field to be planted.
2. Raise and unfold the implement.
3. Open the inlet valve on the implement.
4. Open the outlet valve on the cart.
5. Open the discharge valve on the cart.
6. Check for leaks.
7. Prime the pump^a:
Rotate the ground drive wheel (top forward) to operate the pump until material appears at the row drop lines.
8. If using an electrically activated pump integrated with the seed monitor, set the "Fert.Pump" switch (on the switch under the console) to "ON".

No other actions are usually required. Using a ground-drive pump on the implement, material application starts automatically when the implement is lowered and in motion.

Planting

Liquid fertilizer systems on Great Plains implements are generally not integrated with seed monitor electronics. The tractor operator must visually monitor and periodically check tank condition.

Mind the boom manifold gauge. Investigate any periods when the gauge is reading zero. Generally, the tank sight gauge will not be visible from the tractor cab. The manifold gauge may be the only indication of a material issue.

Check the material level in the tank at every opportunity. Refill as needed to avoid pumping dry.

Material Run-Out

If the entire supply of material is consumed before planting is complete, disconnect the ground drive pump (see implement **Operator** and/or **Seed Rate** manuals for steps to disable a pump, typically removing a sprocket or chain).

Note: Pump Priming:

The standard Great Plains ground-drive piston pump is lower than the tank when the implement is lowered for planting. Any amount of air in the fertilizer lines is quickly pumped out.

If you are using another pump, such as a tractor-mounted pump, or a pump that does not have positive displacement. The pump may have some difficulty with air in the lines. Refilling the tank to pump installation height usually aids in priming.

NOTICE

Equipment Damage Risk:

Avoid dry pumping. Pumps, such as the CDS-John Blue pump supplied by Great Plains, can be damaged if operated without working fluid to pump.

a. For a pump other than a Great Plains ground drive, consult the pump or system documentation for stationary operation.

Field Set-Up Checklists

Use the following tables, and the checklists in your implement Operator^a and Seed Rate^b manual to develop a final checklist for your tractor/implement/cart configuration. Additional or fewer steps may be necessary depending on tractor features, implement options, and planting accessories.

| Implement Checklist | Page |
|--|------|
| <input type="checkbox"/> Basic implement checklist completed | a |
| <input type="checkbox"/> Boom system checklist completed | a |

| Mechanical Checklist | Page |
|--|------|
| <input type="checkbox"/> Cart hitched. Hitch latch plates pinned | 12 |
| <input type="checkbox"/> Tank lid and breather insert secure | 21 |
| <input type="checkbox"/> Ladder raised and pinned | 19 |

| Plumbing Checklist | Page |
|---|------|
| <input type="checkbox"/> Inspect hoses and fittings for leaks | |
| <input type="checkbox"/> Cart inlet valve - CLOSED | 20 |
| <input type="checkbox"/> Tank discharge valve - OPEN | 20 |
| <input type="checkbox"/> Implement inlet valve - OPEN | a |
| <input type="checkbox"/> Cart outlet valve - OPEN | 20 |
| <input type="checkbox"/> Prime pump | 22 |

| Treatments Checklist | Page |
|--|------|
| <input type="checkbox"/> Material depletion rate estimated | |

Field Operation

Perform all steps in “**Pre-Start Checklist**” on page 17 and “**Field Set-Up Checklists**” on page 23.

| First Pass Operation Checklist | Page |
|---|------|
| 1. Complete implement pass 1 checklist | a |
| 2. If cart has a fertilizer system integrated with the DICKEY-john seed monitor, set the “Fert.Pump” switch on the Clutch Folding Module to ON. | a |
| 3. Pull forward, lower implement, and begin planting. | a |
| 4. Check boom manifold pressure gauge | b |

| Suspending Planting Checklist | Page |
|--|----------|
| 1. Stop tractor. Set brakes. | |
| 2. Complete implement Suspend Planting checklist | a |
| 3. If cart has a fertilizer system integrated with the DICKEY-john seed monitor, set the “Fert.Pump” switch on the Clutch Folding Module to OFF. | a |
| 4. Cart outlet valve CLOSED. | 34 or 35 |

| Material Re-Load Checklist | Page |
|---|-------|
| 1. Perform Suspending checklist. | above |
| 2. Check fertilizer level whenever re-loading seed. | |
| 3. Check fertilizer level prior to expected time or distance of fertilizer depletion. | |
| 4. When reloading seed and fertilizer, check consumption against anticipated use to that point. | |

| Ending Planting Checklist | Page |
|---|----------|
| 1. Suspend operations as above, then | |
| 2. Implement inlet valve CLOSED | a |
| 3. Tank discharge valve CLOSED | 34 or 35 |
| 4. Perform a material clean-out to preserve pump as soon as possible. | 28 |

a. See planter or air drill implement Operator manual.

b. Topic covered in Seed Rate manual. See “**Document Family**” on page 9 for a list of Rate manuals.

Short-Term Stopping

These steps presume that the cart remains hitched to the implement during stopping.

1. Complete implement stopping or parking steps.
2. If cart has a fertilizer system integrated with the DICKEY-john seed monitor, set the "Fert.Pump" switch on the Clutch Folding Module to OFF.
3. Ensure implement cannot move. Block tires if tractor is unhitched.
4. Set cart outlet valve to CLOSED.

NOTICE

Equipment Damage Risk:

Do not leave the implement stopped for an extended period of time with fertilizer in the pump. Most fertilizers are corrosive and may damage a pump in a few hours. If extended stopping is required, perform a "Material Clean-Out" (see page 28).

Short-Term Parking

These steps presume that the cart is unhitched from the implement during parking.

1. Spot cart on level pavement or firm level ground. If there is any doubt about the ability of the surface to support the weight on the parking stands, provide stout plates for use under the stands.
2. Complete implement parking steps.
3. Complete "**Short-Term Stopping**" steps on this page, including blocking tires if ground is unlevel.
4. Set implement inlet valve to CLOSED.
5. Set tank discharge valve to CLOSED.
6. Disconnect cart hose at implement quick-fill.
7. Swing cart parking stand up and pin.
8. Un-pin cart hitch latches. Swing up. Pin up.
9. Crank stand feet down. Raise stands equally until cart arms are above hitch hooks.
10. Pull implement away.

NOTICE

Equipment Damage Risk:

Do not leave the implement parked for an extended period of time with fertilizer in the pump (see Notice above). Do not leave the cart parked for an extended period of time with fertilizer in the tank. Fertilizer may evaporate, gel, settle, sediment, stratify, precipitate or coagulate, and clog the lines. If extended parking is required, perform a "Material Clean-Out" (see page 28).

Long-Term Storage

1. Perform a "**Material Clean-Out**" (see page 28): Recover or dispose of remaining material. Flush tank, then partly fill with clean water. Pump water through boom system. Empty and clean cart inlet filter.
2. Store the cart indoors if possible.
3. Complete "**Short-Term Parking**" steps, but set valves to these positions:
Cart inlet - CLOSED
Tank discharge - OPEN
Cart Outlet - CLOSED
4. Breather plug - CLOSED.
5. Tank lid - CLOSED TIGHTLY.
6. Ladder - raised and pinned up.
7. Lubricate all points listed in Maintenance to prevent rust.
8. Clean cart of mud, dirt, excess oil, and grease. Rinse the cart generally. Fertilizers are corrosive to unpainted metal surfaces of the cart.
9. Inspect for worn or damaged parts. Make repairs and service during off season.
10. Use spray paint to cover scratches, chips, and worn areas on the cart to protect the metal.
11. Cover fertilizer cart with a tarp if stored outside.



Troubleshooting

See also the Troubleshooting sections of the implement Operator manual, and the Seed Rate manual.

| Problem | Cause | Solution | Page(s) |
|----------------------------------|---|---|----------|
| No Load | Inlet valve and/or 735 gallon tank discharge valve closed | Open valve(s). | 34 or 35 |
| | Insufficient pressure at source | Elevate source or use pump. | 21 |
| | Inlet filter completely clogged | Clean filter. | 29 |
| | In cold weather, inlet plumbing may be frozen | Move cart to warm space or wait for warmer weather. | |
| | | | |
| Slow Load | Inlet filter partially clogged | Clean filter. | 29 |
| | Insufficient pressure at source | Elevate source or use pump. | 21 |
| | Solids in mix too large for inlet filter | Reconsider using this material. Although you could top-load it, or replace the 12 mesh filter with a 6 mesh, no standard orifice plate sizes are apt to be large enough to pass this material at the row drops. | |
| Tank Level Lower at Field | Material sloshed out breather vent in transport | Fill tank at field, or to less than half full prior to transport, and/or drive slower, brake more gently or chose a smoother route. | |
| | Leak due to damaged or loose hose/fitting | Inspect entire cart plumbing system for leaks. Repair as needed. | |
| No Flow in Field | Pump not yet primed | Prime the pump. Otherwise, at low application rates, it may take some time/distance to clear the air from a completely dry implement inlet and boom system. | 22 |
| | One or more valves closed | Check that tank discharge, cart outlet and implement inlet valves are all open. | 22 |
| | Material depletion | Stop and check sight gauge | 20 |
| | Pump strainer completely clogged | Clean pump strainer. Also check mesh size vs. material requirements. | 29 |
| | Pump inoperative | Check pump sprockets, chain, range and scale setting. Check for internal pump failure. For a pump other than Great Plains ground drive, also check monitor settings, cable harness, fuses, clutches, etc. | a |
| | Cold weather: material too viscous for strainer and/or orifice plates. Material might be entirely frozen. | Wait for warmer weather. Increasing pump strainer mesh and orifice plate sizes to compensate for cold gelling may produce uneven application rates. | |
| | All material dumping at relief valve | Check and adjust the relief valve. If not set too low, orifice size is likely to small for material viscosity or solids. | a |
| Material Dumping | Orifice size too small for material or rate | Re-check orifice plates against Seed Rate manual guidelines. | a |
| | Speed too high | Gallons/acre or liters/ha is correct, but speed is too high for orifice plate size. Slow down or recalculate for speed actually used. | a |
| | Relief valve set too low | Check and adjust the relief valve. If not set too low, orifice size is likely to small for material viscosity or solids. | a |
| | Pump strainer clogged or mesh size too fine for material | Inspect pump strainer. Clean filter mesh. Check size against material requirements. | a |

| Problem | Cause | Solution | Page(s) |
|------------------------------|--|--|----------|
| Low Flow | But no material is dumping... | | |
| | Pump drive in Low Range | Exchange sprockets | a |
| | Valve not fully open | Check tank discharge, cart outlet and implement inlet valves. Align handles with hose. | 34 or 35 |
| | Ground drive wheel slipping | Wait for dryer conditions | |
| | Rate setting calculation (or pump range/scale setting) incorrect | Re-check field size, swath, speed, pump setup and orifice plate sizing. | a |
| | Pump wearing | This check for positive displacement pumps only: With implement lowered and stopped, and tank over half full, disconnect fitting at pump outlet. Once fluid already present in fitting drains off, flow should stop. If material continues to flow, even at a very low rate, it indicates bypass in the pump. Repair or replace the pump. | |
| Erratic Gauge Reading | Air in lines | Prime pump or wait for pump to clear air. | 22 |
| | Failed gauge | Replace gauge. | |
| | Cold weather: material too viscous for accurate reading | Wait for warmer weather. | |
| High Flow | Pump drive in High Range | Exchange sprockets | a |
| | Rate setting calculation (or pump range/scale setting) incorrect | Re-check field size, swath, speed, pump setup, and orifice plate sizing. | a |

a. See Seed Rate manual for relief valve pressure range and adjustment.



Maintenance and Lubrication

Maintenance

Proper servicing and maintenance is the key to long implement life. With careful and systematic inspection, you can avoid costly maintenance, downtime, and repair.

Always turn off and remove the tractor key before making any adjustments or performing any maintenance.

WARNING

Crushing Hazard:

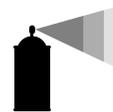
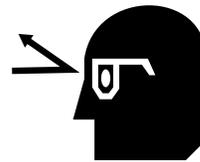
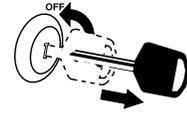
Always have transport locks in place and frame sufficiently blocked up when working on implement. You may be severely injured or killed by being crushed under the falling implement.

CAUTION

Spill Hazard and Tank Damage Risk:

Periodically check the tension of the straps for the fertilizer tank. Strap tension will change as outside air temperature changes. Adjust tension as necessary to prevent personal injury or damage to the fertilizer tank.

1. After using your cart for several hours, check all bolts to be sure they are tight.
2. Maintain proper air pressure in cart tires.
3. Clean cart on a regular basis. Fertilizers are generally corrosive to unprotected carbon steel. Regular and thorough cleaning will lengthen equipment life and reduce maintenance and repair.
4. Lubricate areas listed under “**Lubrication and Scheduled Maintenance**” on page 30.
5. Replace any worn, damaged, or illegible safety labels by obtaining new labels from your Great Plains dealer.



Material Clean-Out

When planting is completed, it is commonly the case that some fertilizer remains. Do not allow left over material to remain in the tank, pump, or boom for more than a few hours. It will corrode the pump and can clog strainer, orifice plates, valves, and lines.

Material Recovery

The tank may be gravity-drained out either the inlet or outlet lines (there is no dump line at the tank).

If draining via the inlet line, this reverses the flow at the inlet strainer. This can cause filtered solids to be returned to the source supply. It can also cause some build-up on the downstream face of the strainer screen. Plan to clean the strainer (page 29) after a drain-back recovery.

Excess Application

If excess material in the tank cannot be recovered, apply it to the field just planted.

- To avoid over-fertilizing, dilute the remaining material with water, or reduce the application rate.
- To minimize seed disturbance, lock-up row units or set their down-force to minimum (cam setting zero; out of notch). Set press wheels for zero or minimum opener disc depth.

System Flush

- Once the tank is empty, fill it with enough clean water to flush the cart hoses, implement hoses, pump system, boom system, and drop lines. If possible, fill from the lid and wash the side walls of the tank.
- Apply this water to the planted field as for “**Excess Application**”.

Pump Preservation

When the weather is expected to remain above freezing, a cast iron pump is protected by the flush water. If the period of storage is of unknown duration, take freezing precautions. Water freezing in hoses, fittings and tubing generally does no harm, but water freezing in a pump can easily fracture the case.

When the temperature may sink below freezing, either remove the pump to warm storage, or fill it with RV anti-freeze (propylene glycol [PG] with corrosion inhibitors). It is not necessary to introduce anti-freeze to the cart tank, nor fill the entire hose and boom system with anti-freeze. Check the product MSDS for the actual concentration of PG in the product (often omitted on the packaging). Calculate the dilution for protection temperature based on independent sources (as product names and package claims are often optimistic).

DANGER

Confined Space Hazard:

Never enter the tank for any reason.

- ▲ *You can be overcome by hazardous fumes very quickly even in an empty tank with the lid open.*
- ▲ *Even if the fumes are not hazardous, oxygen levels may be insufficient for breathing.*
- ▲ *A partially full tank is a drowning risk.*

WARNING

Possible Chemical Hazard:

Wear proper protective equipment as required by chemical manufacturer. Avoid prolonged breathing of chemical fumes. Wear respirator as required by chemical manufacturer. Some chemicals will cause serious burns, lung damage, and death. Avoid contact with skin or eyes. Seek medical assistance immediately if accident occurs. Know what to do in case of an accident.

NOTICE

Equipment Damage Risk:

Do not leave fertilizer or fertilizer residue in pump. Do not allow air to enter pump. Even for short periods of storage, the entrance of air into the pump causes RAPID and SEVERE CORROSION.

Note: Dispose of residual materials as specified by the material supplier.

Note: Removal of the tank discharge fitting requires special procedures or special tools. When working with external fittings, avoid loosening the tank fitting.

Lubrication and Scheduled Maintenance

| | | | | |
|---|--|---|---|--|
|  Multi-purpose spray lubricant |  Multi-purpose grease lubricant |  Multi-purpose oil lubricant |  Inspection |  50 Intervals (operating hours) at which service is required |
|---|--|---|---|--|

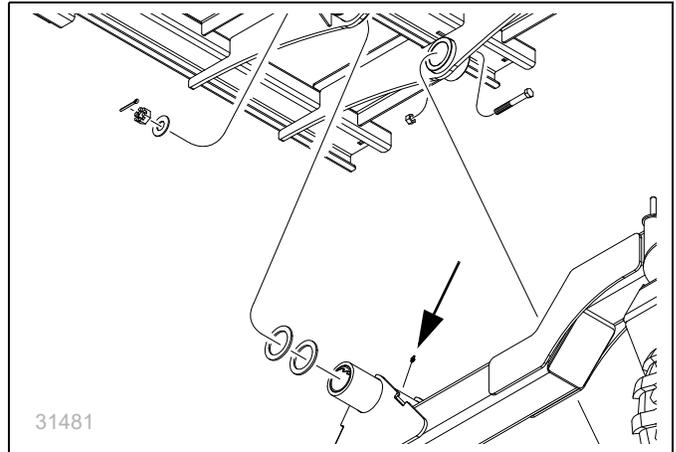
Axle Pivot

| | |
|---|---|
|  |  8 |
|---|---|

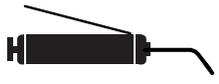
One zerk

Type of Lubrication: Grease

Quantity: Until grease emerges



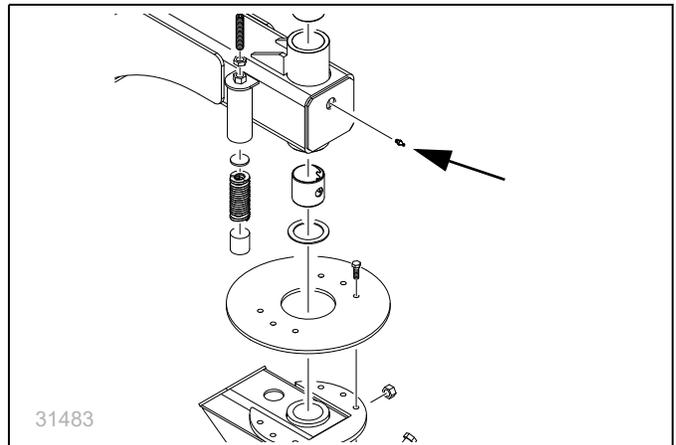
Rear Caster Wheel Pivot

| | |
|--|--|
|  |  8 |
|--|--|

1 zerk each of 2 casters; 2 total

Type of Lubrication: Grease

Quantity: Until grease emerges



Tire Pressures

| | |
|---|--|
|  |  20 |
|---|--|

2 cart tires

Check tire pressures more frequently on a new drill, and with new tires. Check tire pressures whenever there are planting problems.

CAUTION

To Avoid Injury or Machine Damage from Improper Tire Inflation or Torquing of Wheel Bolts:

- Maximum inflation pressure of tires is 73 psi.
- Torque wheel bolts to 170 lb-ft.

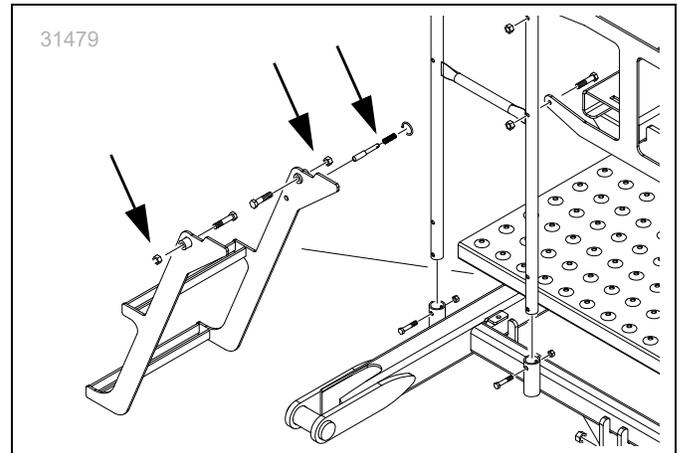
858-773C

Walkboard Hinges



2 pivot points,
1 spring-load pin

Type of Lubrication: Spray lube
Quantity: Coat thoroughly



Caster Stabilizers



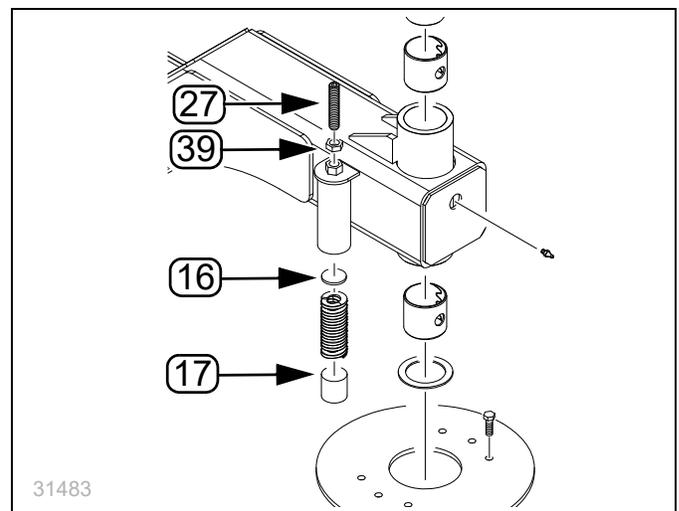
One UHMW brake piston each caster;
2 total.

Replace UHMW piston (17) if its length is less than 3.2cm (1¹/₄in). Also replace piston if missing, damaged, tilted, or top of piston is visible.

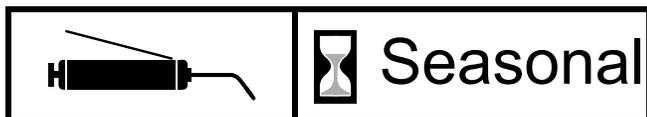
To set spring tension with a new piston:

- Loosen jam nut (39) and back out set screw (27).
- Drive screw in (down) until it contacts spring plate (16).
- Drive screw in another 1 inch (2.5cm).
- Tighten jam nut.

Use more tension as needed to eliminate caster vibration during highway transport.

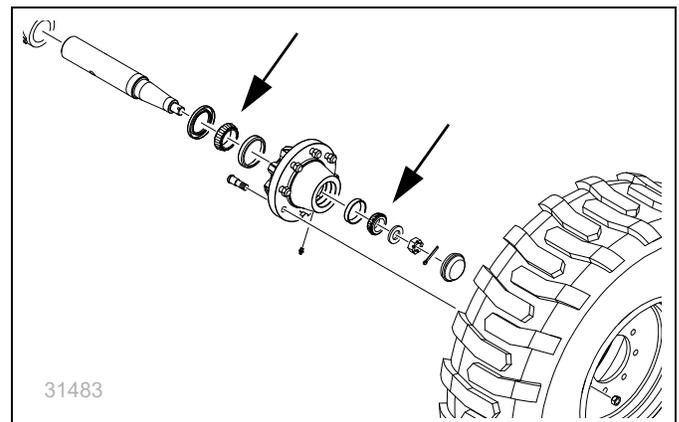


Wing Casters: Wheel Hubs



4 bearings; 2 each wing

Type of Lubrication: Grease
Quantity: Re-pack





Appendix A - Reference Information

Specifications and Capacities

SML-1000, SML-735, and SML-500 Fertilizer Carts

| Cart Model | SML-1000 | SML-735 | SML-500 |
|---------------------------------|---|---------------------------|--|
| Tank Capacity | 1035 gallons (3920 litres) | 735 gallons (2780 litres) | 510 gallons (1930 litres) |
| Track | 120 inch (305 cm) | | |
| Width (maximum) | 184 inch (467 cm) | | 180 inch (457 cm) |
| Width (nominal) | 142 inch (361 cm) | | 141 inch (358 cm) |
| Height | 112 inch (284 cm) | | 102 inch (259 cm) |
| Length | 149 inch (378 cm) | | 147 inch (373 cm) |
| Tire Size | FS24 380/70R19.5 73 psi (503 kPa) 9350 lbs (4241 kg) load | | 380/55R16.5 73 psi (503 kPa) 7400 lbs (3357 kg) load |
| Weight, empty cart | 3300 lbs (1500 kg) | | 3100 lbs (1400 kg) |
| Weight, full water load | 11921 lbs (5400 kg) | | 7348 lbs (3300 kg) |
| Weight, maximum fertilizer load | 17955 lbs (8100 kg) | | 10321 lbs (4700 kg) |

Tire Inflation Chart

| Tire Inflation Chart | | | Tire Warranty Information |
|----------------------|------------------|------------------|---|
| Wheel | Tire Size | Inflation | All tires are warranted by the original manufacturer of the tire. Tire warranty information is found in the brochures included with your Operator's and Parts Manuals or online at the manufacturer's web sites listed below. For assistance or information, contact your nearest Authorized Farm Tire Retailer. Manufacturer Web site Firestone www.firestoneag.com Goodyear www.goodyearag.com BKT www.bkt-tires.com/en Titan www.titan-intl.com Gleason www.gleasonwheel.com |
| Transport | FS24 380/70R19.5 | 73 psi (503 kPa) | |
| Transport | 380/55R16.5 | 73 psi (503 kPa) | |

Torque Values Chart

| Bolt Size | Bolt Head Identification | | | | | | Bolt Size | Bolt Head Identification | | | | | |
|---------------------|---|--------------------|---|-------|---|-------|-------------------------|---|-------|---|-------|---|-------|
| |  | |  | |  | | |  | |  | |  | |
| | Grade 2 | | Grade 5 | | Grade 8 | | | Class 5.8 | | Class 8.8 | | Class 10.9 | |
| in-tpi ^a | N-m ^b | ft-lb ^d | N-m | ft-lb | N-m | ft-lb | mm x pitch ^c | N-m | ft-lb | N-m | ft-lb | N-m | ft-lb |
| 1/4-20 | 7.4 | 5.6 | 11 | 8 | 16 | 12 | M 5 X 0.8 | 4 | 3 | 6 | 5 | 9 | 7 |
| 1/4-28 | 8.5 | 6 | 13 | 10 | 18 | 14 | M 6 X 1 | 7 | 5 | 11 | 8 | 15 | 11 |
| 5/16-18 | 15 | 11 | 24 | 17 | 33 | 25 | M 8 X 1.25 | 17 | 12 | 26 | 19 | 36 | 27 |
| 5/16-24 | 17 | 13 | 26 | 19 | 37 | 27 | M 8 X 1 | 18 | 13 | 28 | 21 | 39 | 29 |
| 3/8-16 | 27 | 20 | 42 | 31 | 59 | 44 | M10 X 1.5 | 33 | 24 | 52 | 39 | 72 | 53 |
| 3/8-24 | 31 | 22 | 47 | 35 | 67 | 49 | M10 X 0.75 | 39 | 29 | 61 | 45 | 85 | 62 |
| 7/16-14 | 43 | 32 | 67 | 49 | 95 | 70 | M12 X 1.75 | 58 | 42 | 91 | 67 | 125 | 93 |
| 7/16-20 | 49 | 36 | 75 | 55 | 105 | 78 | M12 X 1.5 | 60 | 44 | 95 | 70 | 130 | 97 |
| 1/2-13 | 66 | 49 | 105 | 76 | 145 | 105 | M12 X 1 | 90 | 66 | 105 | 77 | 145 | 105 |
| 1/2-20 | 75 | 55 | 115 | 85 | 165 | 120 | M14 X 2 | 92 | 68 | 145 | 105 | 200 | 150 |
| 9/16-12 | 95 | 70 | 150 | 110 | 210 | 155 | M14 X 1.5 | 99 | 73 | 155 | 115 | 215 | 160 |
| 9/16-18 | 105 | 79 | 165 | 120 | 235 | 170 | M16 X 2 | 145 | 105 | 225 | 165 | 315 | 230 |
| 5/8-11 | 130 | 97 | 205 | 150 | 285 | 210 | M16 X 1.5 | 155 | 115 | 240 | 180 | 335 | 245 |
| 5/8-18 | 150 | 110 | 230 | 170 | 325 | 240 | M18 X 2.5 | 195 | 145 | 310 | 230 | 405 | 300 |
| 3/4-10 | 235 | 170 | 360 | 265 | 510 | 375 | M18 X 1.5 | 220 | 165 | 350 | 260 | 485 | 355 |
| 3/4-16 | 260 | 190 | 405 | 295 | 570 | 420 | M20 X 2.5 | 280 | 205 | 440 | 325 | 610 | 450 |
| 7/8-9 | 225 | 165 | 585 | 430 | 820 | 605 | M20 X 1.5 | 310 | 230 | 650 | 480 | 900 | 665 |
| 7/8-14 | 250 | 185 | 640 | 475 | 905 | 670 | M24 X 3 | 480 | 355 | 760 | 560 | 1050 | 780 |
| 1-8 | 340 | 250 | 875 | 645 | 1230 | 910 | M24 X 2 | 525 | 390 | 830 | 610 | 1150 | 845 |
| 1-12 | 370 | 275 | 955 | 705 | 1350 | 995 | M30 X 3.5 | 960 | 705 | 1510 | 1120 | 2100 | 1550 |
| 1 1/8-7 | 480 | 355 | 1080 | 795 | 1750 | 1290 | M30 X 2 | 1060 | 785 | 1680 | 1240 | 2320 | 1710 |
| 1 1/8-12 | 540 | 395 | 1210 | 890 | 1960 | 1440 | M36 X 3.5 | 1730 | 1270 | 2650 | 1950 | 3660 | 2700 |
| 1 1/4-7 | 680 | 500 | 1520 | 1120 | 2460 | 1820 | M36 X 2 | 1880 | 1380 | 2960 | 2190 | 4100 | 3220 |
| 1 1/4-12 | 750 | 555 | 1680 | 1240 | 2730 | 2010 | | | | | | | |
| 1 3/8-6 | 890 | 655 | 1990 | 1470 | 3230 | 2380 | | | | | | | |
| 1 3/8-12 | 1010 | 745 | 2270 | 1670 | 3680 | 2710 | | | | | | | |
| 1 1/2-6 | 1180 | 870 | 2640 | 1950 | 4290 | 3160 | | | | | | | |
| 1 1/2-12 | 1330 | 980 | 2970 | 2190 | 4820 | 3560 | | | | | | | |

- a. in-tpi = nominal thread diameter in inches-threads per inch
- b. N·m = newton-meters
- c. mm x pitch = nominal thread diameter in mm x thread pitch
- d. ft-lb = foot pounds

Torque tolerance + 0%, -15% of torquing values. Unless otherwise specified use torque values listed above.

25199

Plumbing Diagrams

SML-1000 Cart

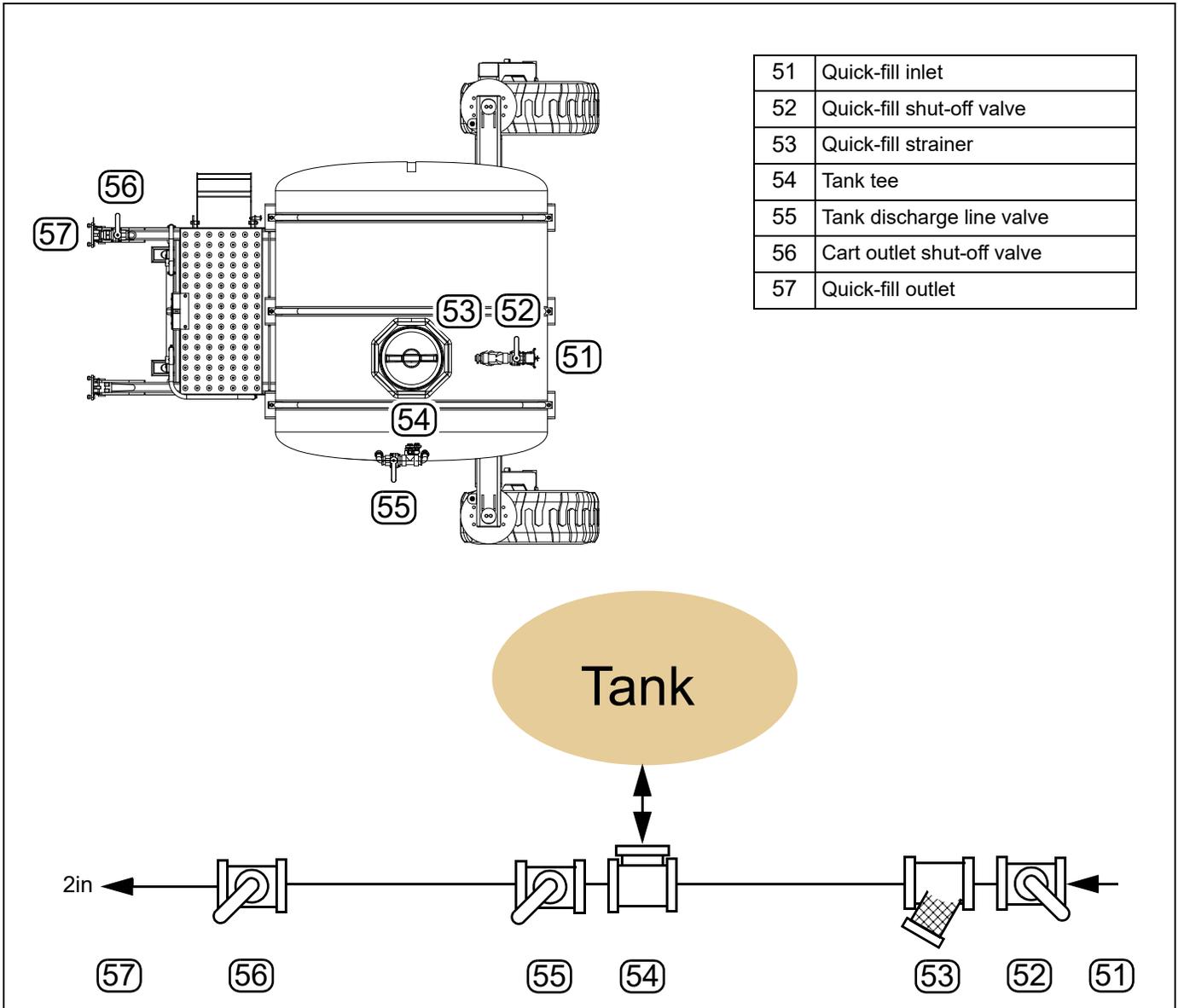


Figure 17
SML-1000 Cart Plumbing

31510

SML-735 Cart

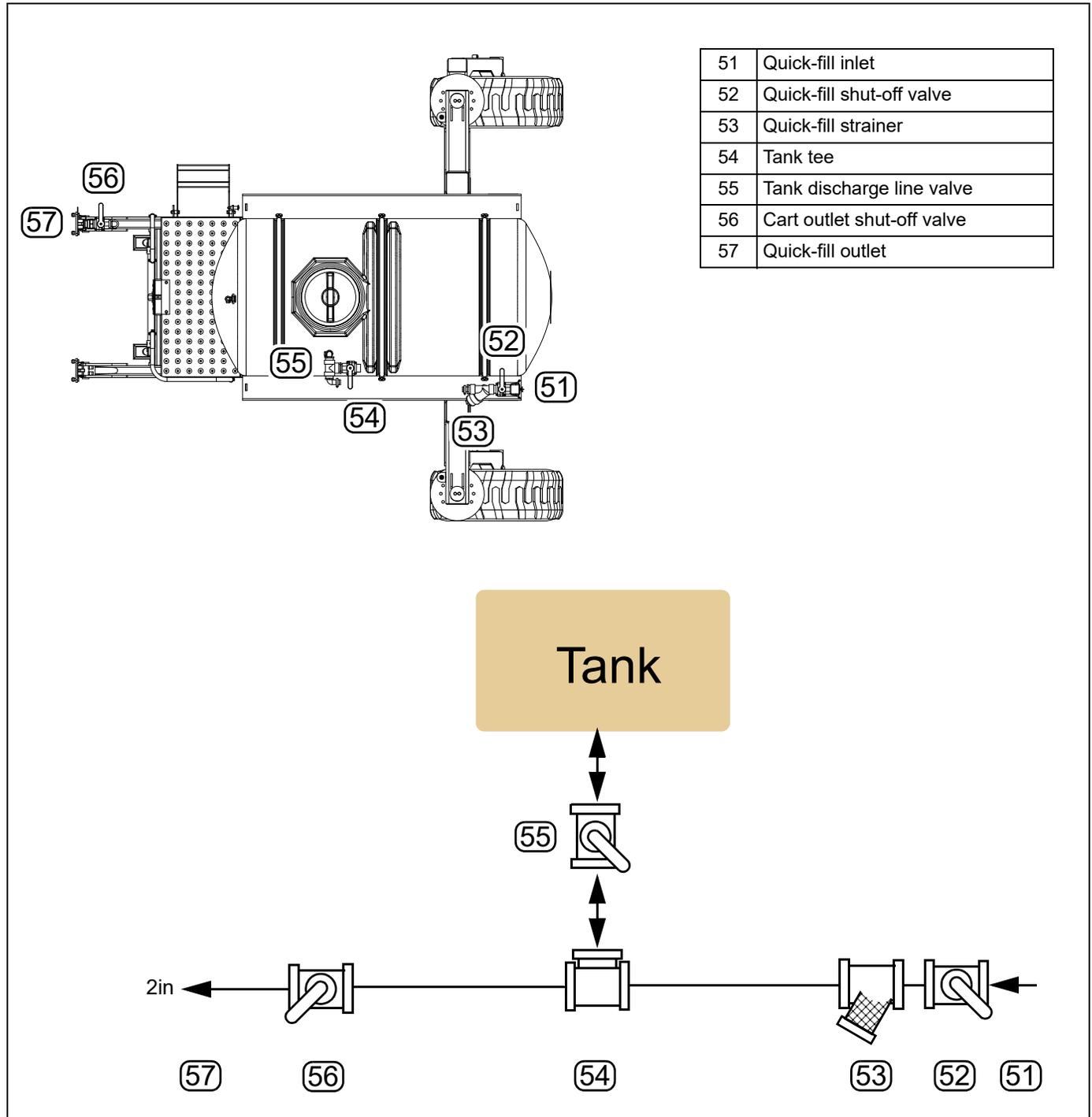


Figure 18
SML-735 Cart Plumbing

31511

SML-500 Cart

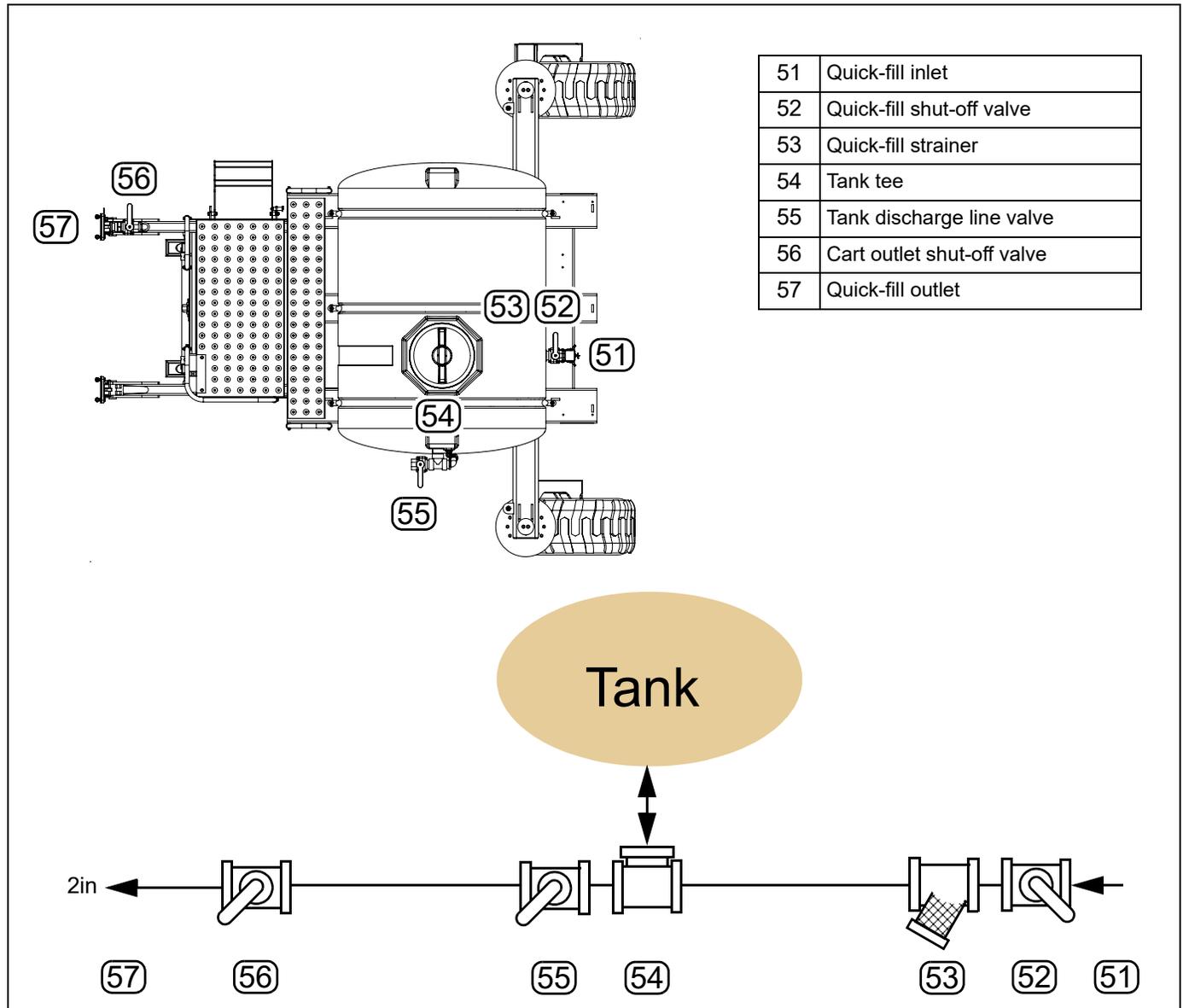


Figure 19
SML-500 Cart Plumbing

32015



Appendix B - Pre-Delivery

The steps in this section are normally completed by the Great Plains dealer.

Unload Truck

The cart is delivered on a flatbed semi-trailer as a largely assembled frame and a pallet with dismantled sub-assemblies and miscellaneous hardware.

Plan the unload to spot the cart mainframe as follows:

- Spot on a level paved area or provide a supporting plate. The rear of the cart frame is initially supported by the bottom tips of the axle pivot gussets. These can easily sink into soil.
 - Allow hoist or lift access to the cart frame for installation of the rear axle and parking stand. Rear axle or caster installation requires a second hoist or lift unless the cart frame is supported by dealer-provisioned stands.
 - If no fork lift is available for eventual mating of the completed cart to the planter or drill that will tow the cart, allow front access for the planter or drill and its tractor, for hitching.
1. Use a hoist or forklift to remove the cart frame from the truck, and spot it at the location for final assembly and hitching.
 2. Use a forklift to remove the axle, or casters, and any miscellaneous pallet and place it near the frame.

The cart may have been shipped with just the casters removed, or with the entire axle removed.



Tools Required

- hoist or forklift with a 3500 lb (1600 kg) capacity,
- a second lift or hoist (or adjustable stands) with at least a 2300 lb (1050 kg) capacity,
- basic hand tools, including a large non-metallic mallet,
- multipurpose lube grease and grease pump,
- painter's masking tape,
- Great Plains green touch-up paint (821-001C),
- and if axle is dismantled for shipment, you will need an anti-seize compound.

Note: There are no special shipping fixtures or hardware that need to be returned to Great Plains.

Note: It is not necessary to remove any ladder sections from the towing planter or drill.

Install Casters

If the cart was shipped with the entire axle removed, skip to “Install Axle” on page 40.

Pre-Load Stabilizers

Refer to Figure 20 and Figure 21

1. On axle weldments, loosen one jam nut (39) each side (2 total).
2. Back set screws (27) almost all the way up (leave them threaded in a few turns).
3. Select two sets:
 - (16) 266-012D PLATE RND 3/16" THK 1 7/8" DIA
 - (47) 807-290C SPRING DIE 2 OD X 5 LONG 1040#
 - (17) 266-020D UHMW RND 2.0 DIA X 2.0 LONG
 Have masking tape at hand.
4. Insert the plate (16), then spring (47) then UHMW piston (17) into the bottom of the stabilizer tube. Push the piston up against the spring until the piston is at least partly inside the tube. Place tape (1) down one side of the tube, across the bottom of the piston, and up the other side of the tube. Use enough tape to hold it in place until casters are mounted.

Elevate Cart

5. Hoist the cart frame high enough to swing down and pin the parking stand (see page 16).
6. Operate the parking stand cranks to fully extend both feet on the stand.
7. Support the frame at the rear axle so that the bottom surfaces of the caster spindle tubes are at least 56 in (142 cm) off the ground.
8. Lower the frame until stand feet are on the ground.

Mount Casters

Refer to Figure 21

9. On a caster assembly, remove and save two sets:
 - (28) 802-034C HHCS 1/2-13X1 1/4 GR5
 - (41) 804-015C WASHER LOCK SPRING 1/2 PLT
 and one:
 - (13) 161-231D NTA CASTER RETAINER CAP
 Do not remove the thrust washer (44).
10. Use a lift or hoist to carefully insert the caster spindle into the axle caster tube. Avoid dislodging the steel bushings in the tubes.
11. Place the cap plate (13) on the top of the spindle. Place a lock washer (41) on each of two bolts (28). Thread the bolts through the cap and into the spindle a few turns.
12. Remove the tape (1) from the stabilizer piston.
13. Tighten the spindle cap bolts to torque spec.

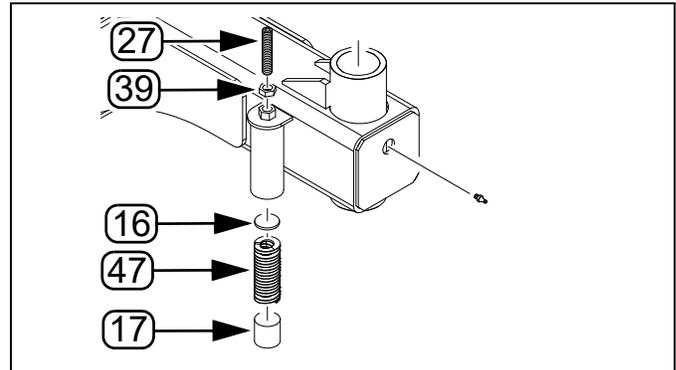


Figure 20
Pre-Load Stabilizer

31483

NOTICE

Paint Damage Risk:

If painter's masking tape is not available, chose a substitute tape that will not damage paint when removed from the stabilizer tubes.

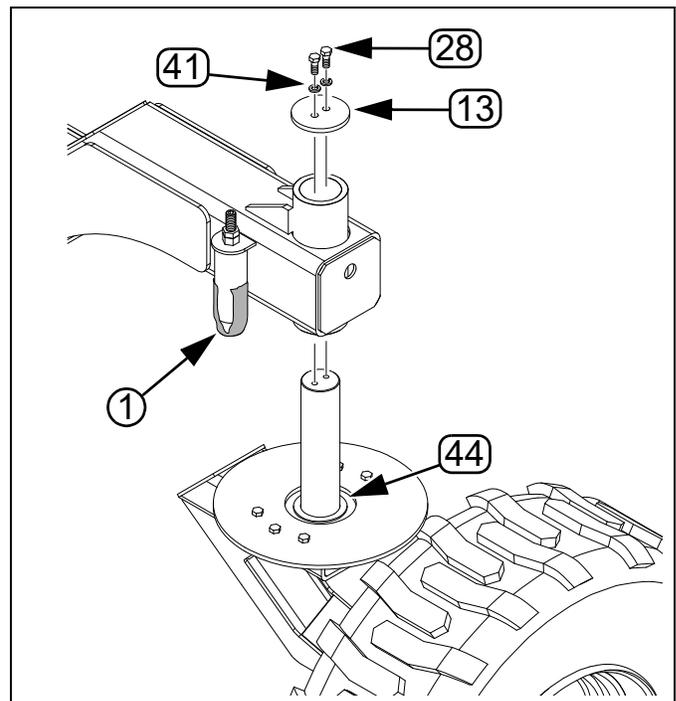


Figure 21
Mount Caster

31515

Note: Either caster may be installed on either side. They are not provided in left/right variants.

Adjust Stabilizers

Refer to Figure 22

14. Loosen jam nut (39) and back out set screw (27).
15. Drive screw in (down) until it contacts spring plate (16).
16. Drive screw in another 1 inch (2.5cm).
17. Tighten jam nut.
18. Repeat step 9 through step 17 for the other caster.

Caster Closeout

19. Apply grease to the zerk (2) at the end of each axle weldment. Pump until grease emerges.
 20. Lower the rear of the cart to the ground.
 21. Adjust parking stand cranks to level cart.
- Pre-delivery is complete.

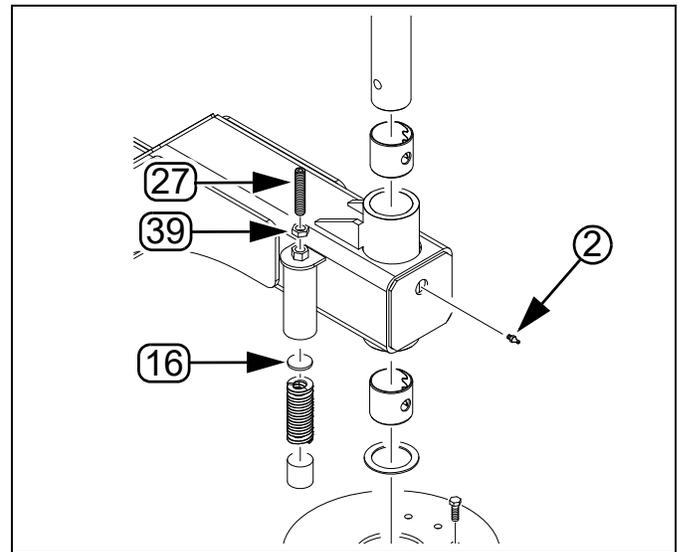


Figure 22
Adjust Stabilizer

31483

Install Axle

If the cart was shipped with only casters removed, this topic does not apply.

There are two methods of mating the axle and frame, depending on lifts available, number of workers, and their experience with this type of assembly:

- A. Lift the frame. Support the front end on its own parking stand. Support the back end with one or more stands located aft of the cart center of gravity, but clear of the axle pivot, and not obstructing the path of the axle. The pre-delivery instructions, beginning at step 22, presume this approach.
- B. Erect the axle assembly, supporting it near the casters with stands. Then hoist the frame and lower it over the axle assembly. This method involves a large overhead load, and is potentially more hazardous.

Refer to Figure 23

22. Hoist the cart frame high enough to swing down and pin the parking stand (see page 16).
23. Operate the parking stand cranks to fully extend both feet on the stand.
24. Lower the frame until the stand feet are on the ground, and the frame is level.
25. Support the rear of the frame close to, but forward of the front axle tube. The tube center-line needs to be at least 56 in (142 cm) above the ground.
26. Select one:
 - (14) 196-652D 40P TOOLBAR PIVOT PIN
 If the pin has other components pre-assembled on it, remove all of them.
27. Select two:
 - (15) 196-775D SPACER WASHER
28. Hoist the:
 - (18) 407-427H AXLE FLOATING SML-1000 CART
 until it is upright.

As needed, rotate the axle (18) about its vertical axis until the front of the axle faces in the same direction as the front of the cart. The caster stabilizers (1) (see page 31) are on the front of the axle. The red and daytime decals (see page 5) are on the rear of the axle.

29. Hoist the axle (18), bring its pivot tube (2) into alignment with the pivot tubes (3) in the gussets.

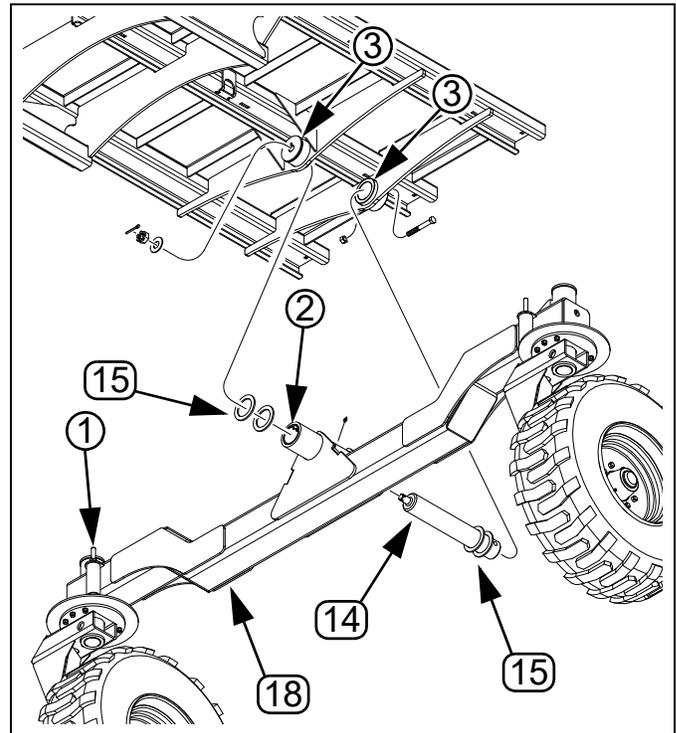


Figure 23
Install Axle, 1 of 2

31481

Refer to Figure 24

30. Slide two spacer washers (15) into the gap between the rear end of the axle tube (4) and the rear gusset tube.
31. Apply anti-seize compound to the pivot pin (14), and carefully insert the threaded end into the rear gusset tube.

While moving it forward, adjust the spacer washers until they fit over the full diameter of the pin.

Stop moving the pin once it has entered the axle tube a short distance.

32. Select two more:
(15) 196-775D SPACER WASHER

Slide two spacer washers (15) into the gap between the front end of the axle tube (2) and the front gusset tube.

33. Continue moving the pivot pin forward carefully, adjusting the spacer washers until they fit over the full diameter of the pin.
34. Select one each:
(14) 196-652D 40P TOOLBAR PIVOT PIN
(31) 802-070C HHCS 3/4-10X6 GR5
(38) 803-026C NUT LOCK 3/4-10 PLT

Insert the bolt (31) through the rear hole of the pin and secure with nut (38).

35. Select one each:
(43) 804-035C WASHER FLAT 1 1/4 USS PLT
(40) 803-079C NUT HEX SLOTTED 1 1/4 - 7
(45) 805-085C PIN COTTER 5/16 X 2 1/2

Add the washer (43) to the threaded end of the pin (14). Spin the slotted nut (40) on until the slots align with the small hole in the threaded end of the pin. Secure with cotter pin (45).

36. Raise the axle assembly (now secured to the cart). Remove the rear cart supports (leave the parking stand erected). Lower the rear end of the cart to the ground. Level frame with parking stand jacks.
37. Lubricate the zerk at the top center of the pivot pin (see page 30).
38. Clean and de-grease the rear end of the pivot pin. Paint it green.

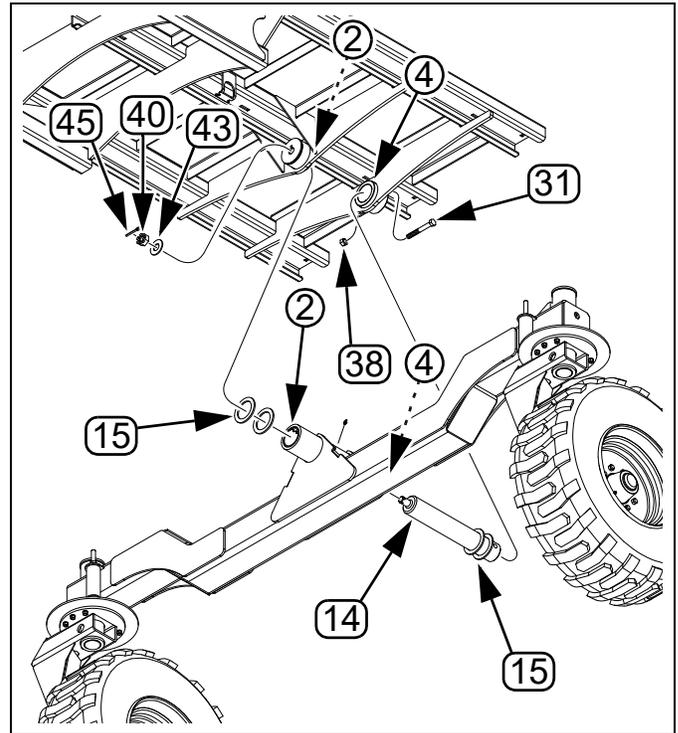


Figure 24
Install Axle, 2 of 2

31481

Appendix C - Initial Setup

Remove Pintle Hitch

If the planter or drill does not presently have an optional trailer pintle hitch installed, skip to topic “**Install Quick Hitches**”.

Refer to **Figure 25** and **Figure 26**

1. Support the front arms and rear pintle of the hitch weldment (19) with a hoist or jacks.
2. Dismount the Type 2 inlet valve (not shown) from: (21) 407-279D FERT VALVE HOOKUP MOUNT. Loosely re-assemble the fasteners in the valve body.
3. Remove eight sets:
 - (30) 802-055C HHCS 5/8-11X2 GR5
 - (42) 804-022C WASHER LOCK SPRING 5/8 PLT
 - (36) 803-021C NUT HEX 5/8-11 PLT
 - and (if present), two:
 - (21) 407-279D FERT VALVE HOOKUP MOUNT
4. Dismount the hitch (19). Loosely re-assemble any loose mounts (21) on the hitch (19) using the removed fasteners. Save all of the removed components for possible future use.

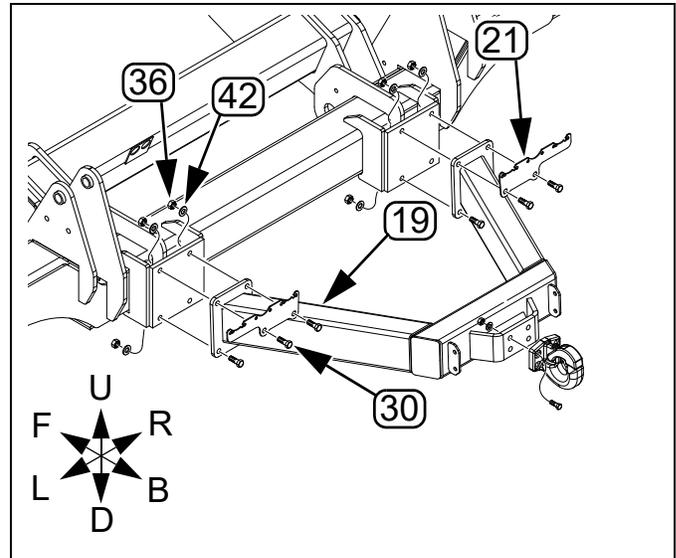


Figure 25
Remove Trailing Pintle Hitch

31354

Install Quick Hitches

Install Left Hitch

1. Select one:
 - (22) 407-454H MOUNT HITCH QUICK CONNECT
 and four sets:
 - (29) 802-053C HHCS 5/8-11X1 3/4 GR5
 - (37) 803-024C NUT LOCK 5/8-11 PLT
2. With wire pin lock on top, mount a quick connect on the left axle hitch plate (1). Secure with four sets of bolts (29) and lock nuts (37).
3. Loosely secure the bottom of the remaining quick connect to the bottom holes of the right axle hitch plate.

Install Right Hitch

4. Select one each:
 - (22) 407-454H MOUNT HITCH QUICK CONNECT
 - (25) 407-570D PLATE SINGLE BALL VALVE MOUNT
 and four sets:
 - (29) 802-053C HHCS 5/8-11X1 3/4 GR5
 - (37) 803-024C NUT LOCK 5/8-11 PLT

With the narrow end of the mount (25) up and to the right, insert the remaining bolts (29) from the rear at the bottom holes, and then through the top holes of the quick connect (22). Secure with lock nuts (37). Tighten all nuts to torque spec.

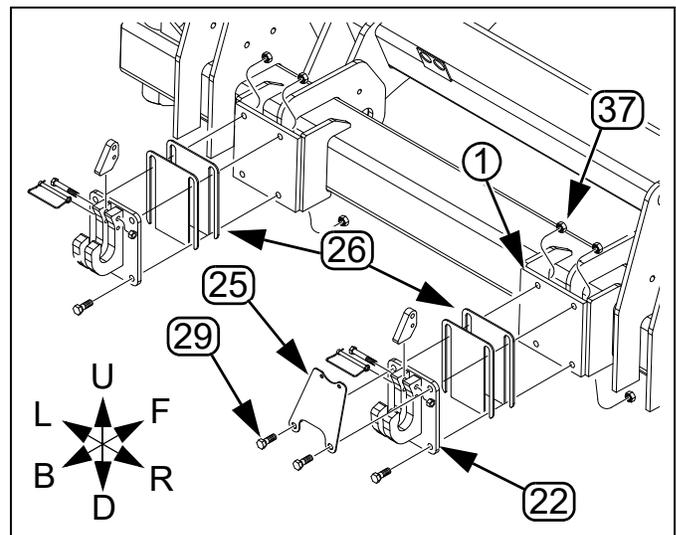


Figure 26
Install Quick Hitches

31492

Note: See “**Shims**” on page 12 for inserting/removing shims (26).

Mount Boom Inlet

Refer to Figure 27 (which depicts cart hitched - do not hitch cart at this time)

- Re-mount the Type 2 boom inlet on the new mount (25).

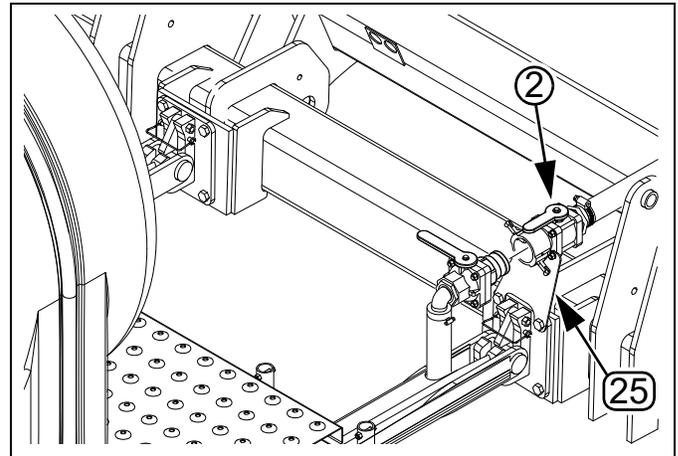


Figure 27
Re-Install Boom Inlet

31495

Install Hitch Latches

If the latches and pins are already installed, skip step 6 and step 7.

Refer to Figure 28

- Select two sets:
 - (23) 407-566D QUICK HITCH LATCH PLATE
 - (32) 802-099C HHCS 1/2-13X3 1/4 GR5
 - (35) 803-019C NUT LOCK 1/2-13 PLT

Position each latch plate (23) with the larger hole on top and both holes to front. Secure between top holes in hitch hook with bolt (32) and lock nut (35).

- Select two:
 - (46) 805-200C PIN WIRE SNAP LOCK 3/8 X 4

With latch plates (23) fully lowered, insert pins (46) through lower holes of hitch hooks and latch plates. Pull up at bottom of latch plates to verify pin engagement.

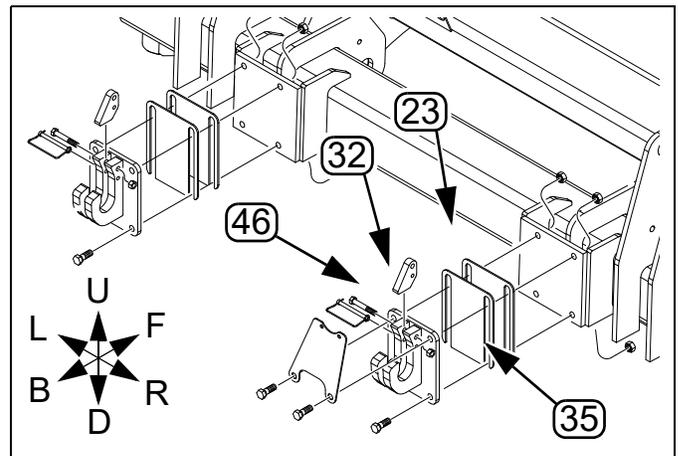


Figure 28
Install Quick Hitches

31492

Check Handrail Fill

This topic applies only to the SML-735 Cart and the SML-500 Cart when used with the YP2425 planter. In this configuration, a section of handrail is removed to provide access to the YP24 walkboard from the cart walkboard.

Refer to Figure 29

- Remove one:
 - (24) 407-567D PLATE HANDRAIL FILL
 and four sets:
 - (33) 802-143C HHCS 3/8-16X2 GR5
 - (34) 803-013C NUT LOCK 3/8-16 PLT

These parts are not required while the cart is used with the YP24.

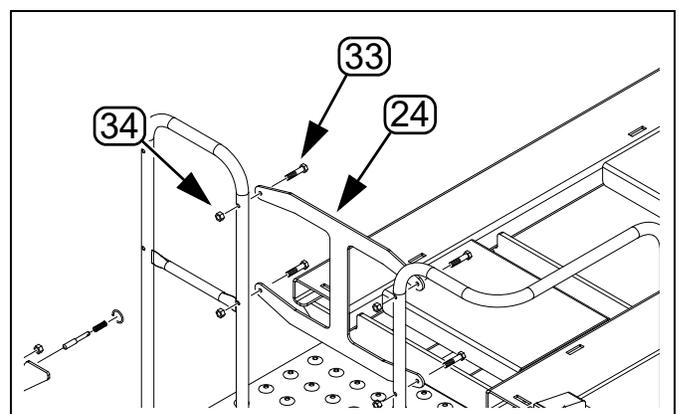


Figure 29
YP24 Only: Remove Filler

31479



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